

TECHNICAL MANUAL

OVERHAUL INSTRUCTIONS

DEPOT

**RADIO SET AN/URC-98, AN/URC-98A
AND
RADIO SET AN/URC-99, AN/URC-99A**

Magnavox Government and Industrial Electronics Company

Contract No. F19628-79-C-0051 and F19628-85-C-0016

This publication is required for official use or for administrative or operational purposes only. Distribution is limited to U.S. Government agencies. Other requests for this document must be referred to Warner Robins ALC/MMEDT, Robins AFB, GA. 31098.

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Published under authority of the Secretary of the Air Force

1 NOVEMBER 1983

Change 1

1 AUGUST 1986

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

LIST OF EFFECTIVE PAGES

NOTE: The portion of the text affected by the changes is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original . . . 0 . . . 1 Nov 83
Change . . . 1 . . . 1 August 86

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SECTION 1

DESCRIPTION

1-1. GENERAL. This manual contains depot maintenance instructions for Radio Sets AN/URC-98, AN/URC-98A, and Radio Sets AN/URC-99, AN/URC-99A. Assemblies and sub-assemblies covered in this manual are listed in table 1-1. Table 1-1 also contains information concerning the applicable maintenance sections of this manual or directs the user to applicable TO manuals.

1-2. SCOPE. This book is divided into eleven sections to aid the user to individual assembly and informational location. Section I, Description; gives general layout of book and information pertaining to equipment. Section II, Special Tools and Test Equipment; provides a list of special tools and test equipment if required. Section III, Theory; describes in detail the functions and circuitry of the assemblies and subassemblies. Section IV, Packing and Unpacking; gives details of packing and unpacking of assemblies and subassemblies. Section V thru X, Maintenance; contains applicable minimum performance tests with fault isolation and alignment procedures. Section XI, Diagrams; contains all applicable foldout drawings and schematics.

1-3. PURPOSE OF EQUIPMENT. The Radio Sets AN/URC-98, AN/URC-98A, AN/URC-99, and AN/URC-99A provide ground-to-air and ground-to-ground normal voice and ECCM communication in the 225.000 MHz to 399.975 MHz military band on 7000 separate channels.

1-4. ADDITIONAL INFORMATION. The following publications have additional information.

TO 12R2-2ARC164-32	INTERMEDIATE MAINTENANCE INSTRUCTIONS, FOR HAVE QUICK MODIFIED AN/ARC-164(V)
TO 12R2-2ARC164-33	OVERHAUL MAINTENANCE INSTRUCTIONS FOR HAVE QUICK MODIFIED AN/ARC-164(V)
TO 12R2-2ARC164-34	ILLUSTRATED PARTS BREAKDOWN FOR HAVE QUICK MODIFIED AN/ARC-164(V)
TO 49B3-39-3	MAINTENANCE INSTRUCTIONS DEPOT TIME SIGNAL SET AN/TRC-177, AN/TRC-177A, AN/TRC-177B
TO 49B3-39-4	ILLUSTRATED PARTS BREAKDOWN TIME SIGNAL SET AN/TRC-177, AN/TRC-177A, AN/TRC-177B
TO 12R2-2URC-101-1	OPERATION INSTRUCTIONS RADIO SET AN/URC-98, AN/URC-98A (AN/MRC-107A) HAVE QUICK MODIFIED
TO 12R2-2URC-101-2	OPERATION INSTRUCTIONS RADIO SET AN/URC-99, AN/URC-99A (AN/MRC-108) HAVE QUICK MODIFIED
TO 12R2-2URC-102	INTERMEDIATE MAINTENANCE RADIO SET AN/URC-98, AN/URC-98A, AND RADIO SET AN/URC-99, AN/URC-99A
TO 12R2-2URC-104	ILLUSTRATED PARTS BREAKDOWN RADIO SET AN/URC-98, AN/URC-98A, AND RADIO SET AN/URC-99, AN/URC-99A

Table 1-1. List of Major Assemblies and Subassemblies

Ref des.	Assembly	Maintenance section
39	Control, Radio Set C-10904/URC-98 MX P/N 707048-801	IX
39A1	Switching Unit Frequency Channel SA-2323/ARC-164 MX P/N 810267-801	IX
39A1A1	MNOS Memory MX P/N 912323-802	TO 12R2-2ARC164-33 MNOS Memory
39A1A1A1	Circuit Card Assembly, MNOS Memory, A1 MX P/N 912237-801	TO 12R2-2ARC164-33 MNOS Memory
39A1A1A2	Circuit Card Assembly, MNOS Memory and Power Supply MX P/N 912236-801	TO 12R2-2ARC164-33 MNOS Memory
39A1A1U1	Semiconductor, Device MX P/N 615662-1	TO 12R2-2ARC164-33
39A1A2	Panel Assembly, Switching Unit MX P/N 810768-801	IX
39A1A2A2	Circuit Card Assembly, Interface MX P/N 918901-803	IX
39A1A2A3	Switch Assembly, Channel Select MX P/N 912303-804	IX
39A1A2S9	Switch Assembly, Panel Assembly MX P/N 165342-801	TO 12R2-2ARC164-33
39A2	Adapter Control, MX-9708/ARC-164 MX P/N 918850-801	TO 12R2-2ARC164-33
39A2A1	Circuit Card Assembly, Power Supply MX P/N 918837-802	TO 12R2-2ARC164-33
39W6	Wiring Harness, CX-12999/ARC-164 MX P/N 466598-801	TO 12R2-2ARC164-33
40	Control, Radio Set C-10905/URC-99 MX P/N 707043-801	VIII
40A1	Audio Switching Assembly C-10905/URC-99 MX P/N 810623-801	VIII
40A1A1	MNOS Memory MX P/N 912323-802	TO 12R2-2ARC164-33

Table 1-1. List of Major Assemblies and Subassemblies-Continued

Ref des.	Assembly	Maintenance section
40A1A1A1	Circuit Card Assembly MNOS Memory A1, MX P/N 912237-801	TO 12R2-2ARC164-33
40A1A1A2	Circuit Card Assembly MNOS Memory and Power Supply MX P/N 912236-801	TO 12R2-2ARC164-33
40A1A1U1	Semiconductor, Device MX P/N 615662-1	TO 12R2-2ARC164-33
40A1A2	Circuit Card Assembly, Power Supply MX P/N 918837-802	TO 12R2-2ARC164-33
40A1A3	Panel Assembly, Switching Unit MX P/N 810586-801	VIII
40A1A3A1	Circuit Card Assembly, Audio Conn. Interface MX P/N 810736-801	VIII
40A1A3A2	Circuit Card Assembly, Interface MX P/N 918901-803	VIII
40A1A3A3	Switching Assembly Channel Select MX P/N 912303-804	VIII
40W1	Wiring Harness MX P/N 565669-801	X
40W1A1	Circuit Card Assembly, Audio MX P/N 810621-801	X
41	Adapter, Mounting MT-6165/URC MX P/N 707005-801	VII
41A1	Mounting Base, Electrical Equipment MX P/N 810753-801	VII
41A2	Circuit Card Assembly, Divider/Audio MX P/N 811397-801	VI
41PS1	Power Supply MX P/N 538667-802	TO 49B3-39-3
41Y1	Oscillator MX P/N 626404-2	TO 49B3-39-3

SECTION II

SPECIAL TOOLS AND TEST EQUIPMENT

2-1. GENERAL. This section contains a list of special tools and test equipment required for depot maintenance of the Radio Sets AN/URC-98, AN/URC-98A, AN/URC-99, and AN/URC-99A.

2-2. SPECIAL TOOLS. No special tools are required.

2-3. TEST EQUIPMENT. Test equipment for depot maintenance is listed in table 2-1.

2-4. SPECIAL MATERIALS. After repair of printed circuit cards, use conformal coating material (MIL-I-46058, Type UR) to cover areas where conformal coating was removed during maintenance.

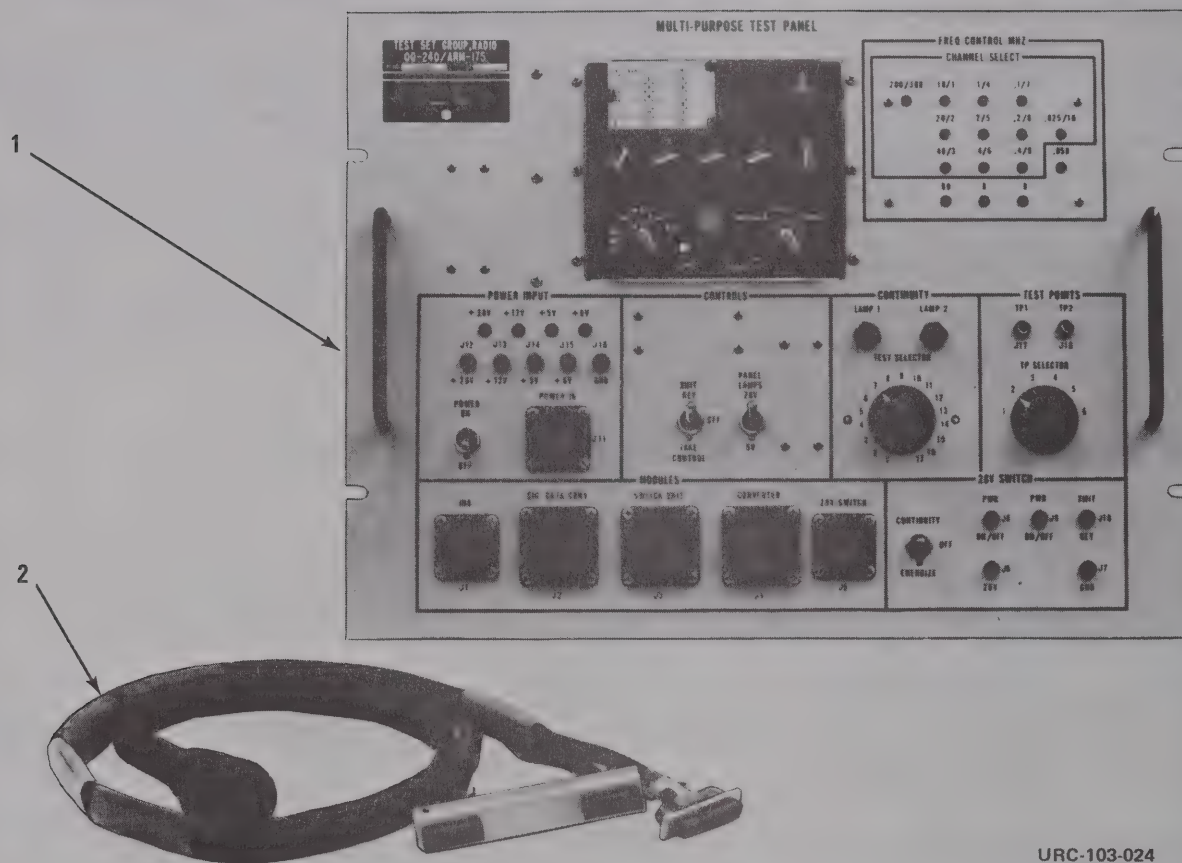
2-5. CABLE ADAPTER MAINTENANCE. Figures 2-6 and 2-7 are exploded views of the Cable Adapter and Cable Adapter Divider/Audio. These figures will aid in the maintenance and proper care of the cable adapters. Figures FO-11 and FO-12 also will greatly enhance the service ability of these cables.

Table 2-1. Test Equipment for Depot Maintenance

Type designation	Alternate type designation	Figure & index number	Nomenclature	Use
OQ-240/ARM-175	None	2-1-1	Multipurpose Test Panel	Provides means of checking switching unit functions.
SB-4098/ARM-175	None	2-2-1	Divider/Monitor Test Panel	Provides test points, switching, indicators and input power to perform maintenance checks on the Divider/Audio board.
707204-801	None	2-3	Cable Adapter	Provides test points, switching and interface for the URC-98/99 Radio Set Control and Test Panel.
707203-801	None	2-4	Cable Adapter Divider/Audio	Provides test points, switching and interface for the Divider/Audio board.
AN/PSM-6	Equivalent		Digital Volt-meter	Provides means of measuring voltage, resistance and current.
200CD Hewlett-Packard	Equivalent		Audio Oscillator	Provides means for audio test signals.
5453 Tektronic	Equivalent		Oscilloscope	Provides means of visual measurement of frequencies, waveforms and voltages.
HP 8660 Hewlett-Packard	Equivalent		Signal Generator	Provides means of supplying 10 MHz test signal to Divider/Audio board.
HP 6267B	Equivalent		Regulated Power Supply, 0-40 Vdc	Provides prime input voltages +28, +12, +6.2 Vdc.
CX-13048/ARM-175	None	2-5	Special Purpose Electrical Cable Assembly, Branched	Used to connect operating power to test fixtures.

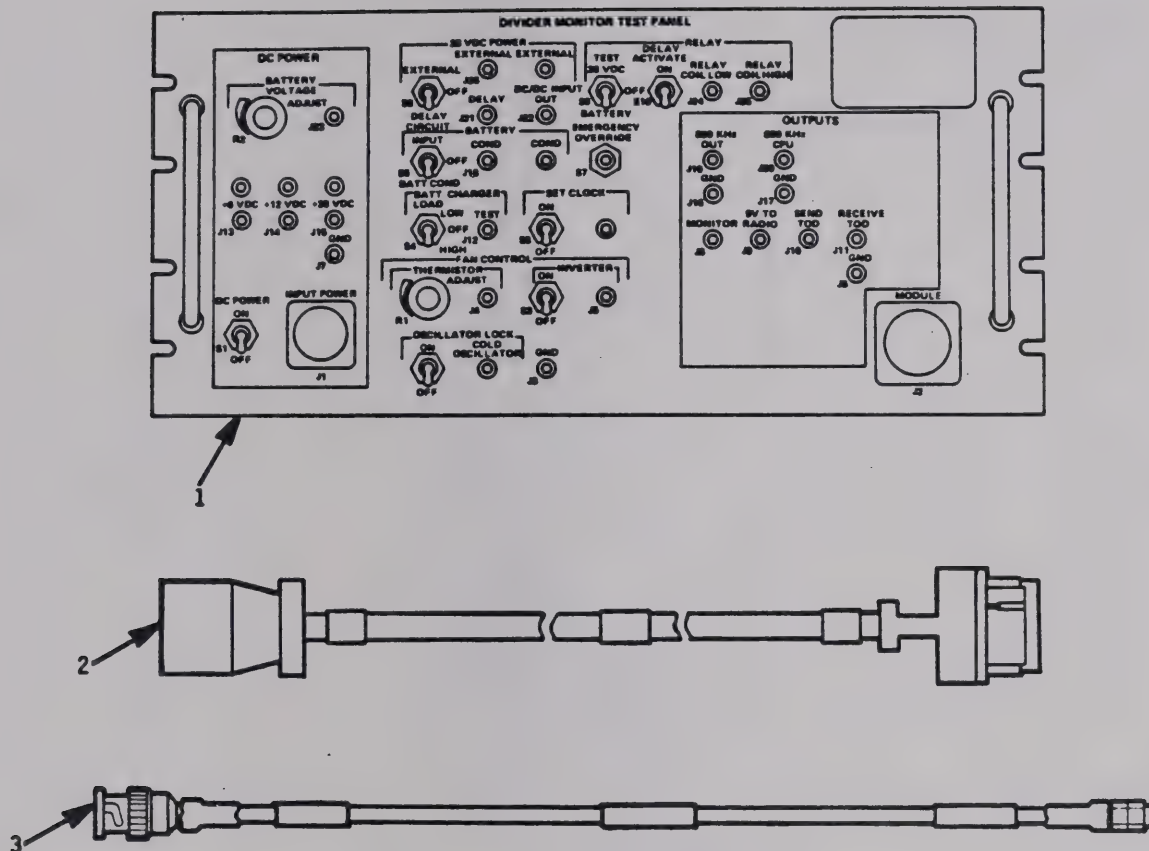
Table 2-1. Test Equipment for Depot Maintenance-Continued

Type designation	Alternate type designation	Figure & index number	Nomenclature	Use
CX-13049/ARM-175	None	2-1-2	Special Purpose Electrical Cable Assembly	Used to connect switching unit to test panel.
565849-801	None	2-2-3	Coaxial Cable Assembly (2)	Provide connection between circuit card J2 (10 MHz (N)) and signal generator.



URC-103-024
76081487 MOD.

Figure 2-1. OQ-240/ARM-175, Multipurpose Test Panel Set

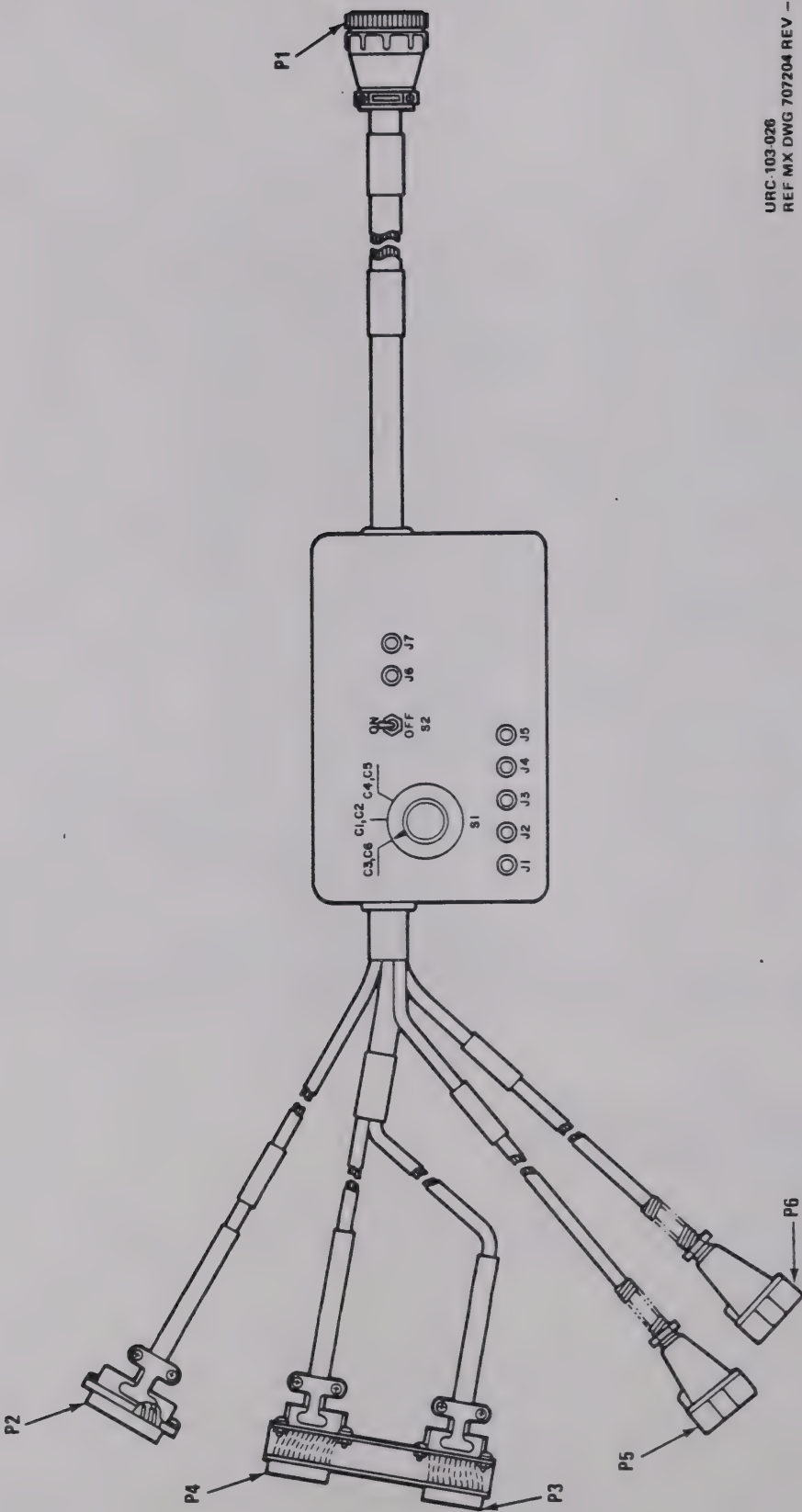


LEGEND

1. DIVIDER MONITOR TEST PANEL
2. DIVIDER MONITOR CABLE ASSY.
3. COAXIAL CABLE ASSY.

URC-103-025

Figure 2-2. Divider/Monitor Test Panel Assembly



URC-103-026
REF MX DWG 707204 REV -

Figure 2-3. Cable Adapter

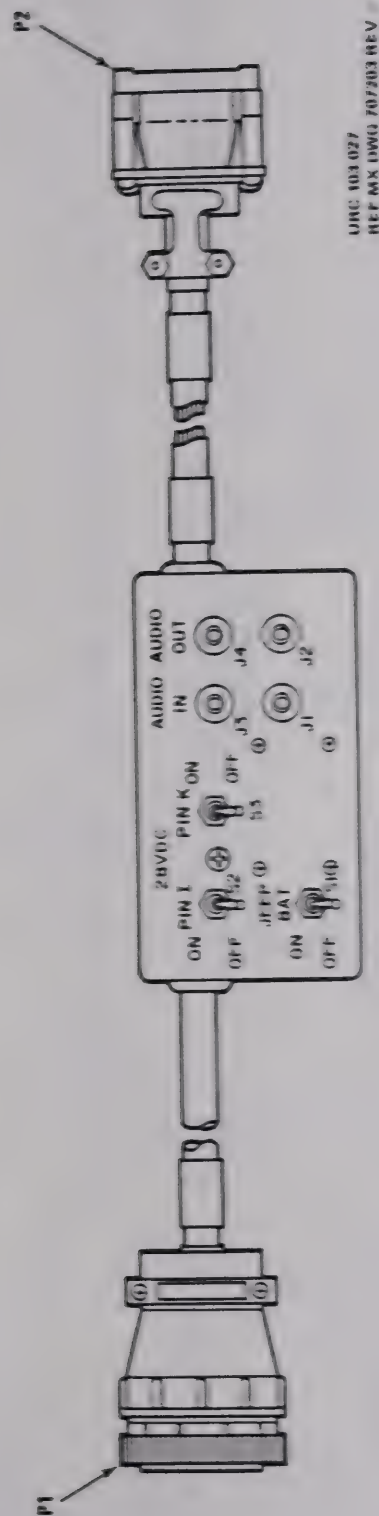


Figure 2-4. Cable Adapter, Divider/Audio

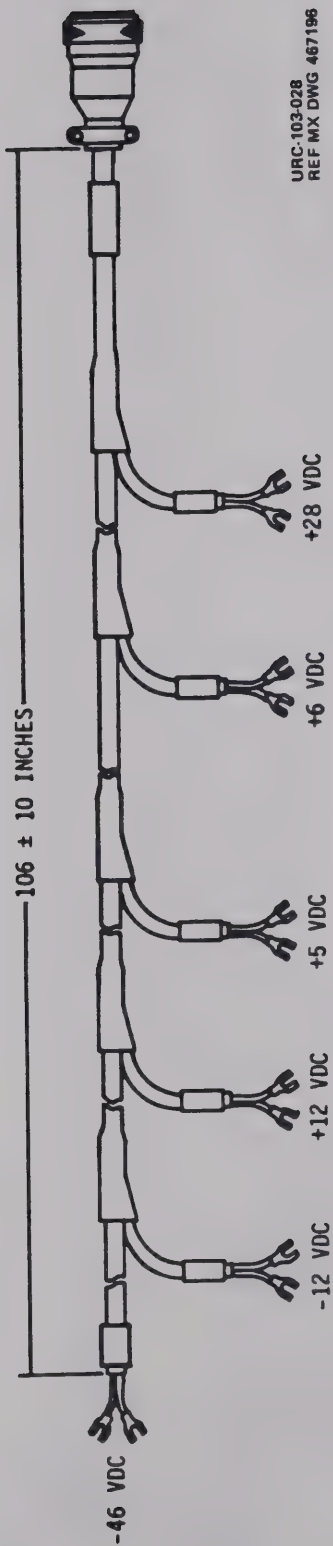
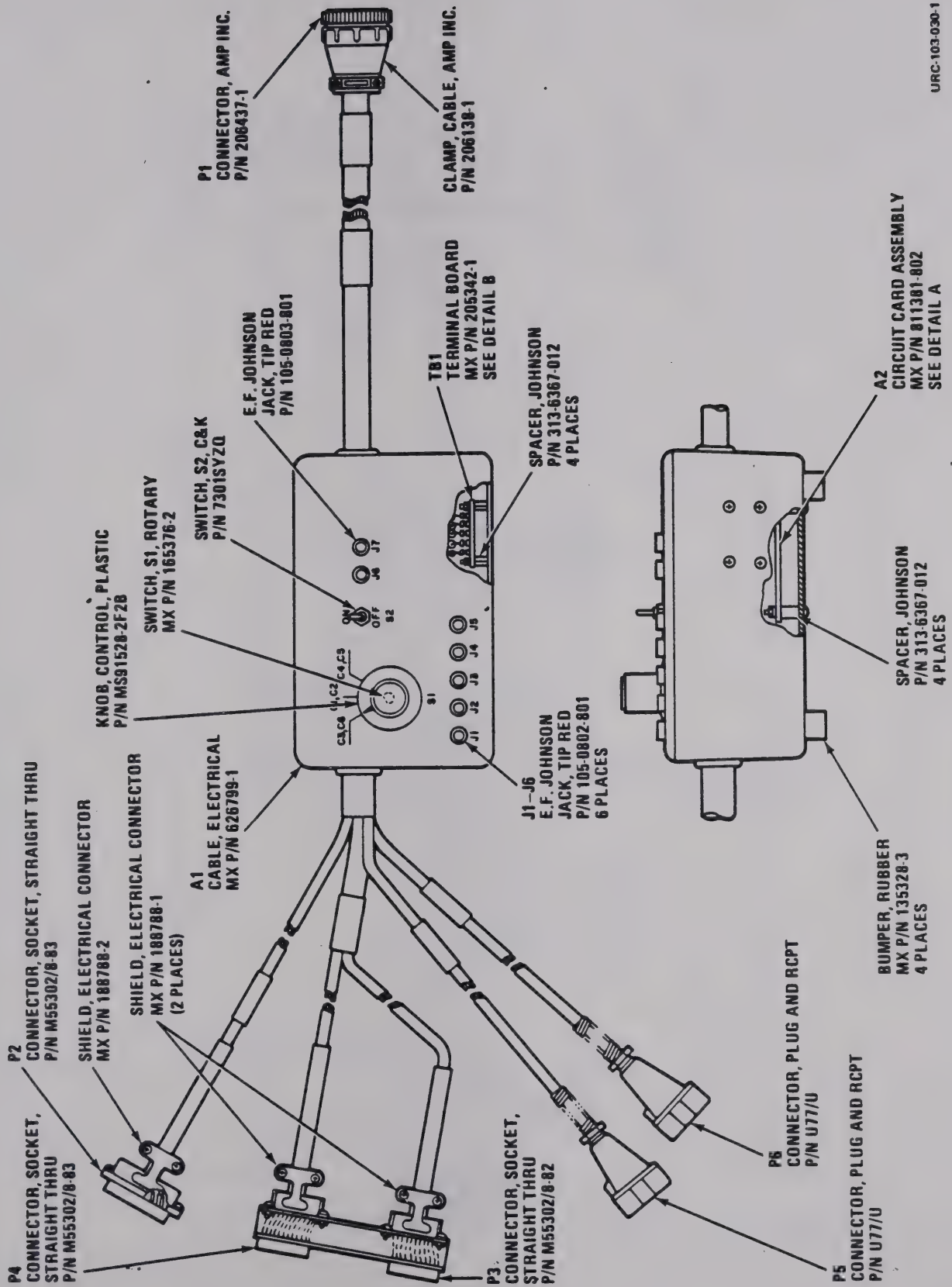


Figure 2-5. CX-13048/ARM-175 Power Cable Assembly



URC-103-030-1

Figure 2-6. Exploded View, Cable Adapter (Sheet 1 of 2)

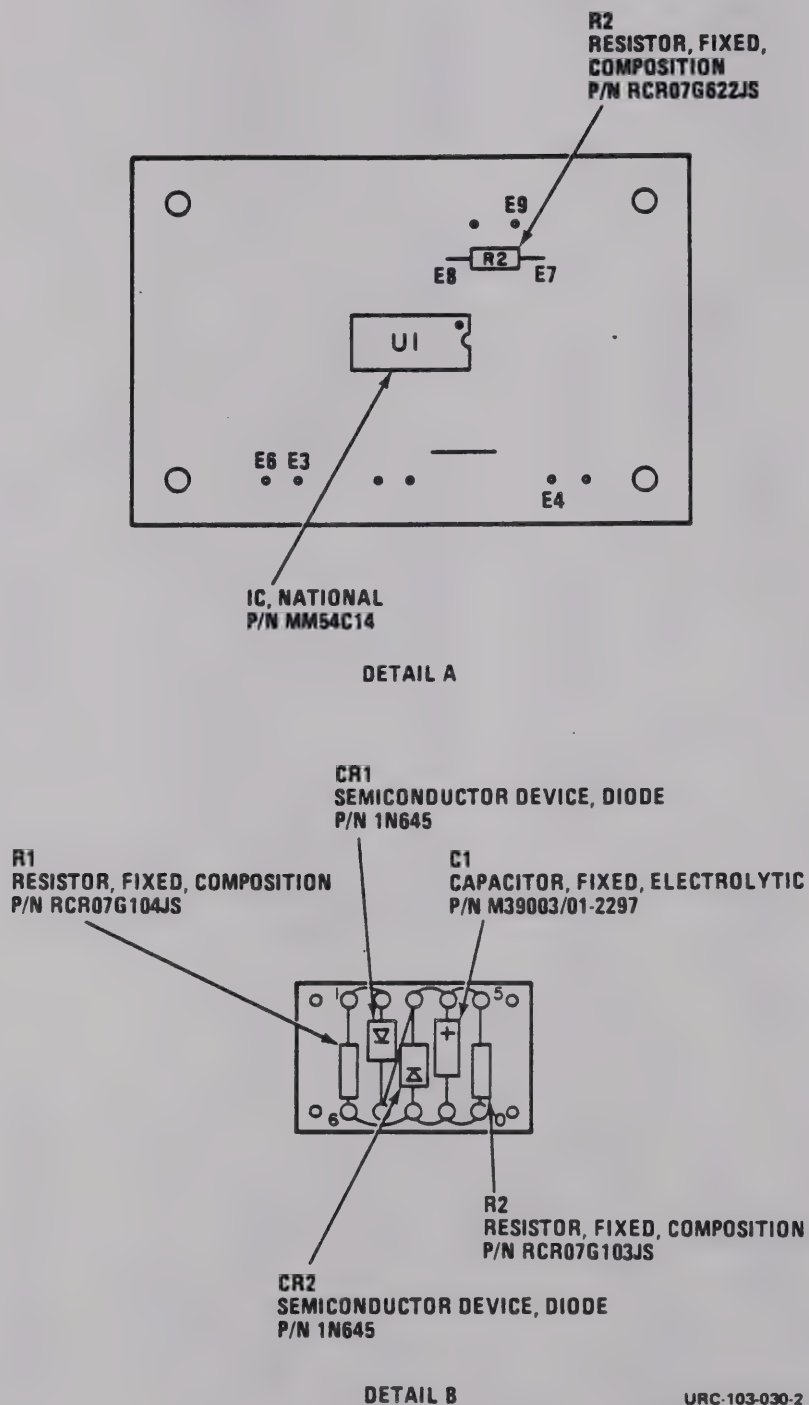


Figure 2-6. Exploded View, Cable Adapter (Sheet 2 of 2)

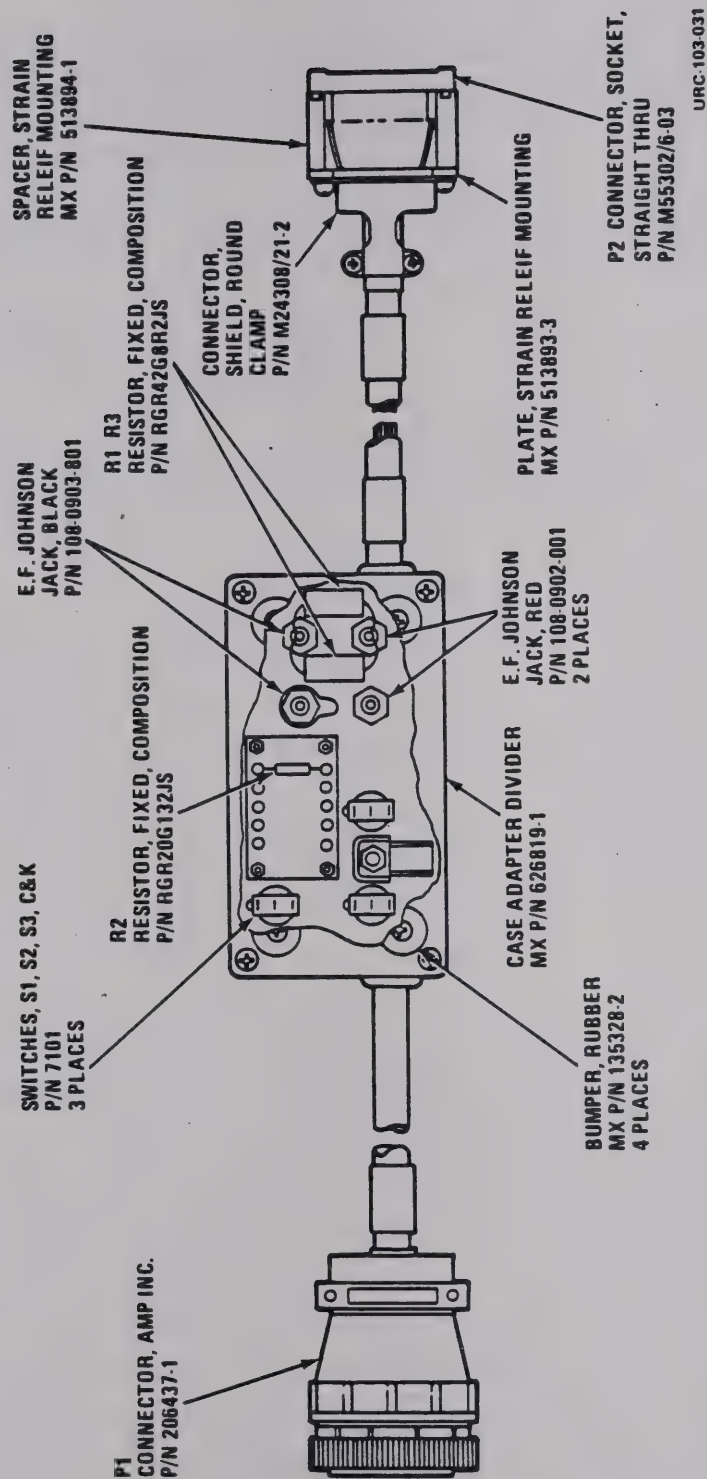


Figure 2-7. Exploded View, Cable Adapter, Divider/Audio

SECTION III

THEORY OF OPERATION

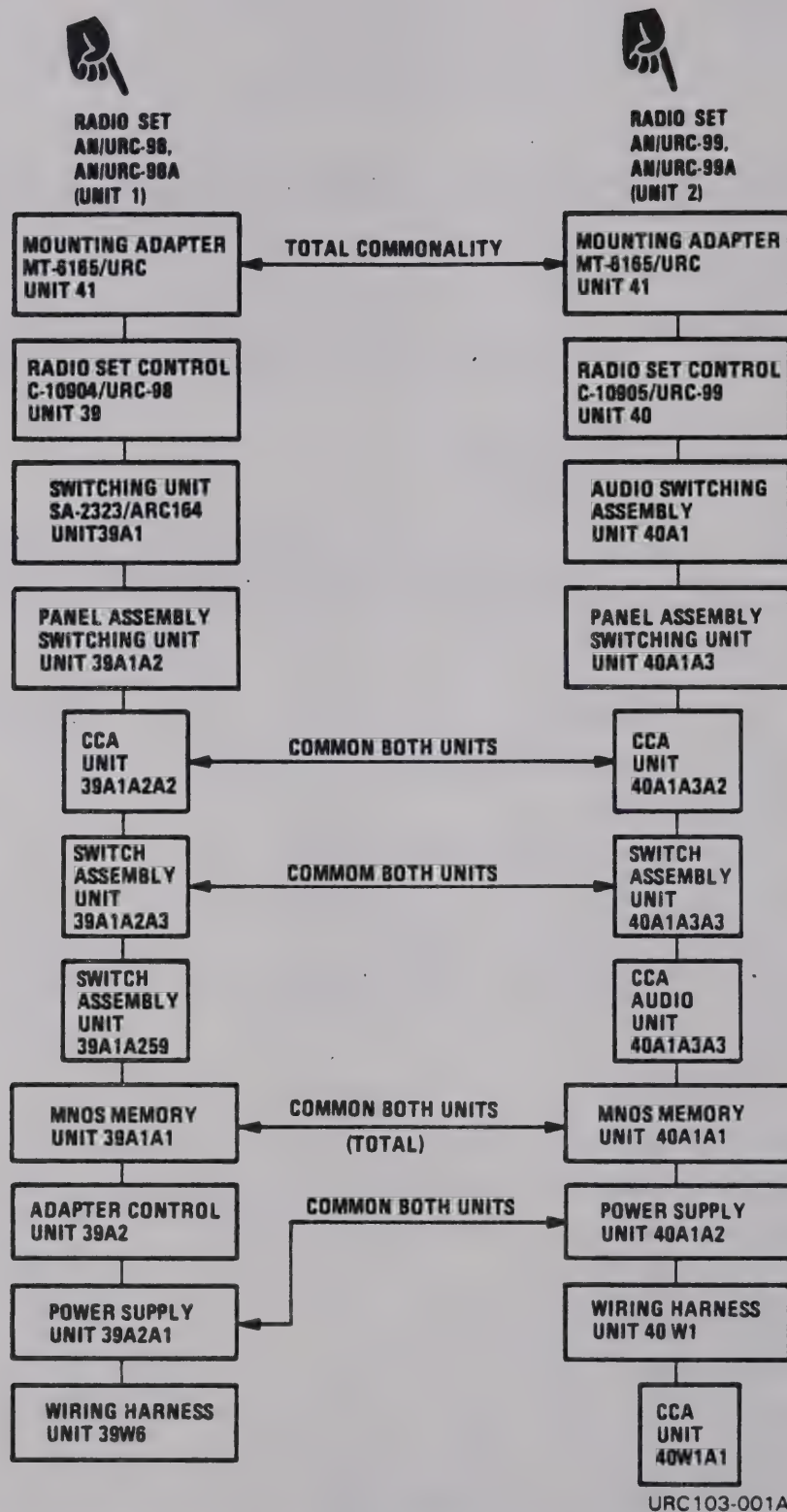
3-1. GENERAL. Theory of operation for the Radio Sets AN/URC-98, AN/URC-98A, AN/URC-99, and AN/URC-99A, is presented in this section. This theory is presented to support maintenance procedures in subsequent sections. Section XI supports section III with schematic diagrams.

3-2. LINE REPLACEABLE UNITS. Figure 3-1 illustrates interchangeability of both AN/URC-98/A and AN/URC-99/A. LRU's covered in this section are as follows:

- a. Mounting Adapter, MT-6165/URC
- b. Radio Set Control, C-10904/URC-98
- c. Radio Set Control, C-10905/URC-99

3-3. THEORY. This section will cover theory of each of the LRU's to a component level, as deemed necessary. The theory will cover LRU's assemblies and subassemblies not previously covered in other TO's. This section is outlined as listed below:

<u>Assembly</u>	<u>Paragraph</u>
Mounting Adapter MT-6165/URC	3-4
Power Supply PS-1	3-5
Circuit Card Assembly Divider/Audio	3-6
Audio Amplifier	3-6a.
Voltage Divider/Battery Charger	3-6b.
Battery, Anti-Deep Discharge Circuit	3-6c.
800 kHz Signal	3-6d.
800 kHz Monitor	3-6e.
Radio Frequency Oscillator	3-7
Radio Set Control, C-10905/URC-99	3-8
Audio Switching Assembly/Panel Assembly	3-8a.
Audio Interface A3A3	3-8b.
Circuit Card Assembly A3A2	3-8c.
Wiring Harness 40W1	3-9
Circuit Card, Audio Filter	3-9a.
Radio Set Control C-10904/URC-98	3-10
Switching Unit, SA-2323/ARC-164	3-10a.
Panel Assembly Switch Unit	3-10b.
Wiring Harness 39W6	3-10c.



URC103-001A

Figure 3-1. Interchangeability AN/URC-98, AN/URC-98A and AN/URC-99, AN/URC-99A

3-4. MOUNTING ADAPTER MT-6165/URC. Mounting Adapter MT-6165/URC, hereafter known as Mounting Adapter is a hermetic housing containing a receiver-transmitter, not part of mounting adapter, and other associated equipment. The only internal control is internal battery BT-1, switch S-1. All other controls are on the radio set control and front panel of mounting adapter. Refer to TO 12R2-2URC-101-1 and TO 12R2-2URC-101-2 for operating controls URC-98/A and URC-99/A respectively. Theory of internal components of mounting adapter is as follows in subsequent paragraphs. Figure FO-1 is the schematic diagram of MT-6165/URC.

3-5. POWER SUPPLY PS-1. Power Supply PS-1 of the mounting adapter supplies the following voltages.

- a. +6.2 Vdc
- b. +12.0 Vdc
- c. +27.5 Vdc.

The Connector P1 is the only repairable/replaceable part of the power supply.

3-6. CIRCUIT CARD ASSEMBLY, DIVIDER/AUDIO. The Divider/Audio Circuit Card is an assembly that serves five functions for the mounting adapter, as follows: 1) audio amplifier, 2) voltage divider/battery charger, 3) battery anti-deep discharge circuit, 4) divides the 10 MHz signal from the rubidium oscillator to a 800 kHz signal for receiver-transmitter functions, 5) monitors the 800 kHz signal for frequency errors. Refer to FO-2 for schematic diagram and FO-3 for component location diagram Divider/Audio, MT-6165/URC.

a. Audio Amplifier. The incoming audio signal enters the Divider/Audio board at J1-X AUDIO IN. The signal is applied to the operational amplifier, U4-2, by Coupling Capacitor C6. R14 is an impedance matching resistor. R15 and R32 combined, are an attenuating resistor network. The audio signal is processed through U4 and outputted at U4-8 through a coupling capacitor C11 to J1-T, AUDIO OUT. Resistor R16 and capacitor C10 create a suppression network to keep U4 from small amplitude oscillation which may occur during the negative swing of the audio signal.

b. Voltage Divider/Battery Charger. Primary power (27.5 Vdc) enters the Divider/Audio board at J1-R. U1, voltage regulator, ensures the board of a maximum regulated +27.5 Vdc in conjunction with proper selection of R4. R5, a drop resistor, yields a +22 Vdc for proper operation of operational amplifier U4. Resistors R6, R7 and R8 along with diodes CR5 and CR6 form a voltage divider with current limiting features (CR5 and CR6) for battery (internal) charging +19.5 Vdc. The battery charging circuit runs thru CR9, a steering diode, to J1-V. Power supply (PS1) supplies the Divider/Audio board with +12 Vdc and +6.2 Vdc at J1-U and J1-Q, respectively. The +12 Vdc at J1-U is filtered by capacitor C1 and R34 is a bleed resistor. The +12 Vdc from J1-U is used to supply power for different components of the Divider/Audio board. The +6.2 Vdc entering Divider/Audio board at J1-Q is dropped across CR2 resulting in a +5 Vdc. This power is filtered by capacitor C1 and exits board at J1-O for use in on board receiver-transmitter. R1 is a bleed resistor. The +6.2 Vdc at J1-Q is also dropped across CR1 resulting in a +5 Vdc for use of Divider/Audio board components. Capacitors C3 and C4 are for filtering of the +5 Vdc for Divider/Audio board components. J1-K, I and G provide external power +28 Vdc and Jeep Battery for a controlled power output to DC/DC converter (PS2) at J1-W.

c. Battery, Anti-Deep Discharge Circuit. The anti-deep discharge circuit of the Divider/Audio board is incorporated within the voltage divider/battery charge circuit and composed of K1, Q1, Q2, U2 and U3. Primary power, J1-R runs thru steering diode CR4 across voltage divider network R2 and R3 to Zener diode VR1. VR1 converts and regulates the +27.5 Vdc to +5.1 Vdc. This +5.1 Vdc is read as a HIGH signal at inputs U2-11 and 12, a quad 2-input NOR gate. The signal is outputted U2-8, a low signal to U2-6. This process determines if the +27.5 Vdc primary power is present. J1-S, WARM/COLD MONITOR is the input to the Divider/Audio board indicating whether the Rubidium Oscillator is at temperature, WARM is a Low signal, COLD is a High signal. This monitor signal is read at U2-2 and 3 and outputted at U2-1 inverted, to U2-5. The combined signals U2-5 and 6 are outputted at U2-4 to transistor Q2 turning it on or off. Turning Q2 on or off changes the signal at U3-5 causing U3 to change state turning Q1 on or off thus energizing or de-energizing the coil of K1. Operational amplifier U3 serves the same function two ways. U3-5 is also tied to U1-Y, DC/DC input through precision resistor R10. U3-6 is tied to J-1 as well through resistor R9; it also is tied to VR2 causing U3-6 to maintain +5.6 Vdc potential. When operating on the internal battery, U3 monitors J1-Y to determine that the battery is above +1.5 Vdc per cell, if not, U3 will output a low signal shutting down Q1 de-energizing K1 keeping internal battery BT1 from deep discharge. Components U2, Q2 in addition to U3 and Q1 keep the Rubidium Oscillator from a cold start using internal battery BT-1 as explained above. In this case the Rubidium Oscillator is started and run from +27.5 Vdc through CR3 to J1-Y, DC/DC input.

d. 800 kHz Signal. The 800 kHz signal, for use in the onboard receiver-transmitter, is derived from a circuit of the Divider/Audio board comprised of Q3, Q4, U5, U6, U7, U8, U9 and U10. Figure 3-2 is a block diagram of the 800 kHz signal circuit. In theory, the circuit takes a 10 MHz signal from the Rubidium Oscillator and divides it down to 800 kHz. The 10 MHz from the Rubidium Oscillator is fed to the Divider/Audio board at J2 and coupled to Q3 by capacitor C12. Transistors Q3 and Q4 along with diodes CR13 and CR14 enhance and square the 10 MHz signal to a 10 MHz square wave. Resistors R17, 18 and 19 are bias resistors and capacitor C14 is a couple capacitor coupling the partially formed signal from Q3 to Q4. Resistor R20 is an impedance matching resistor. The signal is then fed from collector Q4 to U4-1 (dual four bit binary counter). U5 is used as a divide-by-two counter. The signal exits U5-3 a 5 MHz square wave and is fed to U7-1, U5-13 and U8-1, 2, 4 and 5. Micro-circuits U5, U6 and U7 form a 1 of 5 pulse inhibitor. The 5 MHz square wave of U5-3 is fed to U5-13 and U7-1. When U5-9 goes HIGH U6-8 will go LOW, thus inhibiting the fifth pulse in U7. The resultant frequency is 4 MHz. Though the 4 MHz signal seems to be unstable it is important to note that the equipment utilizing this signal need only recognize the trailing edge pulse (see fig. 3-3, waveforms, 1 of 5 pulse inhibitor). The 4 MHz signal is fed to U9, a divide-by-five counter, and the resultant frequency of U9-10 is 800 kHz. The 800 kHz signal is fed to U6-5 and U8-9, 10, 12, 13. The Micro-circuits U6-5, 6 and 1, 2 and U10 form a master reset circuit for U9. After the fifth pulse (spike) U10 changes state, HIGH to LOW, thru U6-1, 2 to reset U9. Figure 3-4 will assist in theory and maintenance of U10 master reset. The 800 kHz frequency is fed to U8-9, 10, 12, 13. U8 is a 50 ohm line driver operating the 800 kHz thru U8-8, R31 to J1-A (800 kHz out).

e. 800 kHz Monitor. This circuit is used to determine if the 800 kHz signal is running above or below 800 kHz. These detectors check period length not pulse widths. The 800 kHz signal is fed from U6-8 to U11-2, 10 and U12-3. U11-2 is the low frequency detector and U11-10 is the high frequency detector. Normal operation theorizes that U11-2 is always retriggered (RC circuit C18 and R25) thus keeping U11-13 HIGH into U7-13. U11-10 always times out, by precision resistor R27 and C20

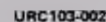
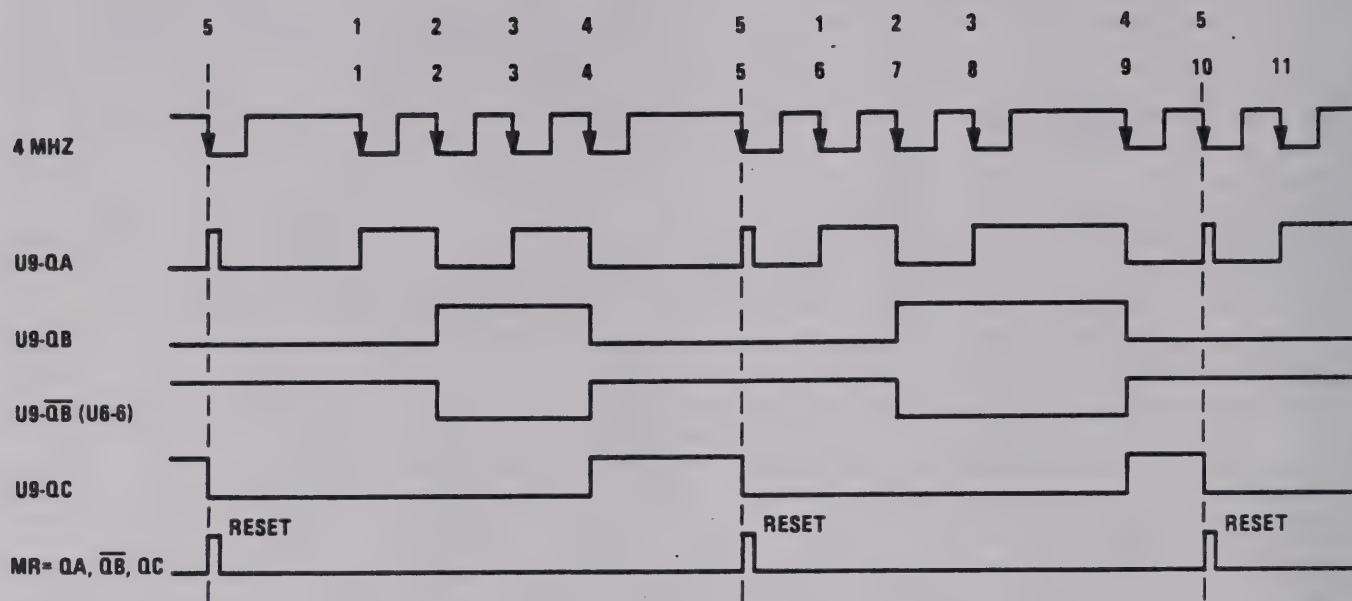


Figure 3-2. Block Diagram, 800 kHz Signal Circuit



Figure 3-3. Waveforms, 1 of 5 Pulse Inhibitor



URC-103-004

Figure 3-4. U10 Master Reset Pulse Waveform

(1.8 mS), thus keeping U11-12 High. U11-12 is then clocked into flip-flop U12-2. U12-5 is held High and fed to U7-12 and U10-13. U11-13 (High) is fed to U10-2 and U7-13. With both U7-12, 13 held High, U7-11 is held LOW to U13-10 holding U13-12 High. U13-12 is fed to U10-1. With all inputs to U10 High, U10-12 is Low holding transistor Q5 off keeping J1-C monitor line HIGH (nominally +3.8 Vdc) through a +5 Vdc source and resistor R29. A fault detected by U7 (U7-12 or 13) will initiate a low at U7-11 causing U13-12 to go low (20 ms minimum).

3-7. RADIO FREQUENCY OSCILLATOR. The radio frequency oscillator is a precision rubidium oscillator which produces a 10 MHz output. The rubidium oscillator is a self-contained unit and is not repairable beyond connector pin straightening. If the rubidium oscillator fails to pass the minimum performance test, contact the following command for depot disposition:

WR-ALC/MMIRCA-2
AV468-5587

3-8. RADIO SET CONTROL C-10905/URC-99. Radio Set Control C-10905/URC-99 is a moisture resistant control and provides the man-machine interface for communications. Operating functions of URC-99/A can be found in TO 12R2-2URC-101-2. Figure FO-4 is the schematic diagram for URC-99/A and is used to support subsequent theory presented here. Because of the simplicity of the circuit (fig. FO-4), signal tracing procedures were deemed not necessary.

a. Audio Switching Assembly/Panel Assembly. The Audio Switching/Panel Assembly has two audio interconnecting ports (J1 and J2) AUDIO 1 and AUDIO 2, respectively. They are located on the audio interface circuit card A3A1. Potentiometer R1 (10 K ohms) controls the volume of the received audio signal to the audio interface board. Switch S15 is a DPDT switch which enables panel edge lighting and has a momentary

contact position (SEND TOD) for transmission of TOD data. Switches S14 and S12, found on assembly A3A3, are channel select switches for the preset mode of operation. They select the ten's and units digit respectively. S11 is a DPST momentary pushbutton located under the access cover assembly. This switch, when control is in proper mode, erases previous frequency and loads frequencies into memory for preset frequency applications. Proper activation of all circuits in this section is acquired through grounding of proper circuit. S10, a four position switch assembly selects hundredths digit of frequency. Switch S6, a rotary ten position switch, selects the tenths digit of frequency. Rotary switch, S7, is a ten position switch and it selects units digit of frequency. S8, a ten position rotary switch, selects the tens digit of frequency selected. S9, a four position switch selects the hundreds (200 or 300) as well as 'A' position for ECCM operation. The 'T' position, a momentary position, is selected for TOD function. Switch S1 a dual disk three position rotary switch, selects mode of operation; Manual, Preset or Guard. Switch S2, a dual disk four position rotary switch, selects one of four functions in the operating system. VR1, Zener diode, is in the ADF section of S2 which is not used in this application. S3, a SPST rotary switch, selects bandwidth (WB, NB). S4, a SPST toggle switch, turns squelch on or off. S5, a SPST momentary pushbutton, is used for TOD and tone applications.

b. Audio Interface A3A3. The Audio Interface circuit card provides two external audio parts for handsets. The circuit card is a combination of capacitors (6), a resistor and two connectors (J1 and J2). Figure FO-6 is a component location diagram for the audio interface card. The audio is fed from R1 (A5J1-20) to the circuit card, point E3 and outputted J1-A and J2-A. The signal is also fed thru R1, point E2 of the circuit card to A5J1-18 (RCV AUDIO LOW). Audio inputs to the circuit card are J1-C and J2-C and outputted E4. Circuit card E5 is the output for the keyline signal.

c. Circuit Card Assembly A3A2. Circuit card assembly A3A2 (fig. FO-7 Component Location Diagram) is an interface card for power on and off ADF enable, XMT/ADF interlock and Guard on and off. This card is in use when two controllers are in operation, it has no functional use in this application.

3-9. WIRING HARNESS 40W1. Wiring Harness, 40W1, is an independent wiring harness of the housing. The harness interconnects the internal circuit cards and components of the RSC, and acts as a focal point to rest of the system through (J1). Refer to FO-8, Schematic Diagram Wiring Interconnect C-10905/URC-99. S16, a DPDT toggle switch, acts as power in/out and Keep Alive in/out to interface with the rest of the peculiar system (URC-99/A). The harness is of such a simple design that no in-depth theory is deemed necessary (no active components just point to point wire contact).

a. Circuit Card, Audio Filter. Circuit card, audio filter, W1A1, filters the switched +28 Vdc and received audio. Figure FO-9 is a component location diagram for the audio filter.

3-10. RADIO SET CONTROL C-10904/URC-98. Radio Set Control C-10904/URC-98 is essentially the same as Radio Set Control C-10905/URC-99 except for the following differences: Radio Set Control C-10904/URC-98 does not have the audio ports (audio 1 and audio 2), the edge panel light switch (S15-B), the TOD SEND switch (S15-A), the KEEP ALIVE switch (S16), the speaker port (J2) nor the TOD port (J3).

a. Switching Unit SA-2323/ARC-164. The Switching Unit, SA-2323/ARC-164 is comprised of the following; Panel Assembly Switching Unit and MNOS Memory.

b. Panel Assembly Switching Unit. Refer to FO-10 Diagram Schematic, Switching Unit C-10904/URC-98. The Panel Assembly Switching Unit of the URC-98/A again is essentially the same as the Audio Switching Unit of the C-10905/URC-99 with the following differences. The URC-98/A has two squelch adjustments under the access cover assembly, R1 and R2 (main and guard squelch respectively). These two adjustments are not functional in this application. All other switches (S1 thru S14) and controls (A2 and A3) are of the same function as described in paragraph 3-8a. with the previously stated exceptions.

c. Wiring Harness 39W6. Wiring Harness, 39W6, is an independent interconnecting cable that interconnects adapter control (A2), switching unit (A1) and transfers signals in and out of URC-98 thru J1 and J2. Maintenance procedures are found in Section V, Maintenance of Assemblies and Subassemblies Other References.

SECTION IV

PACKING AND UNPACKING PROCEDURES

4-1. GENERAL. This section contains procedures for packing and unpacking assemblies and subassemblies received for repair.

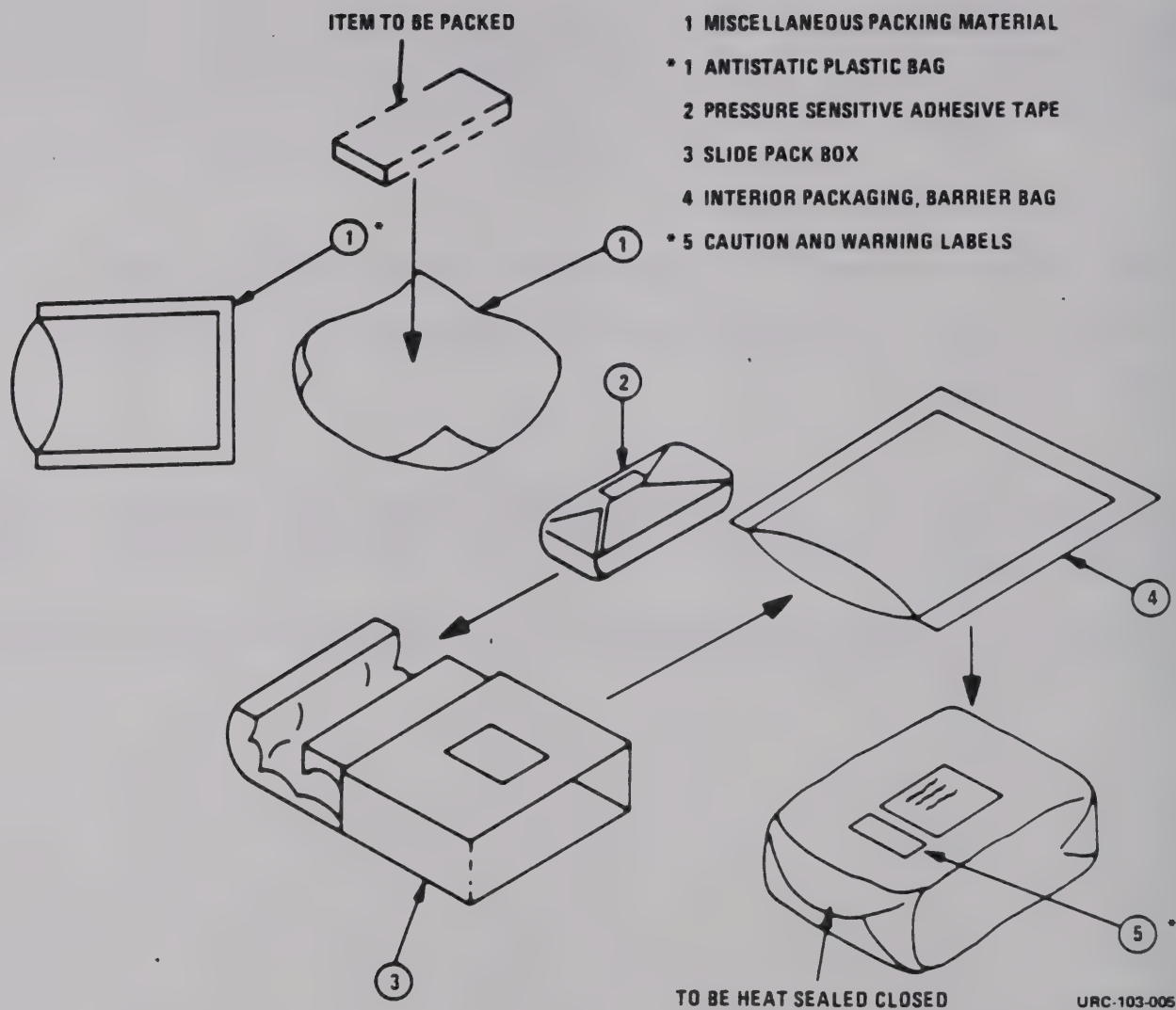
a. Switching Unit. A switching unit assembly is packaged for shipping to depot without a memory subassembly. If a switching unit is shipped from depot, it should be packed without a memory. If a memory subassembly is returned to or shipped from depot, it should be packed into a separate container.

NOTE

Upon receipt of assemblies or subassemblies, do not discard any packing material as it (for equivalent material) will be used for the return of repaired items.

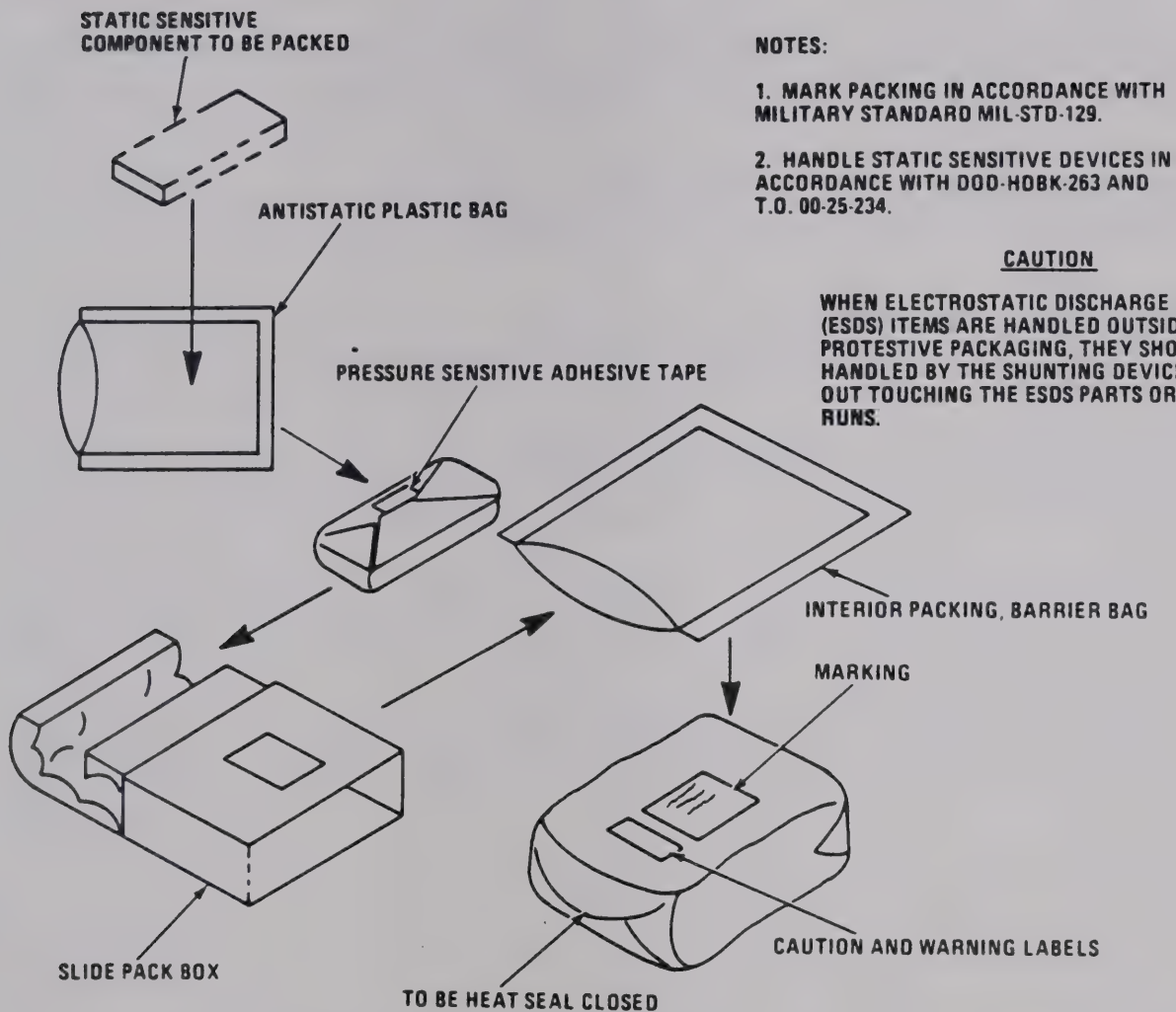
4-2. PACKING. Figures 4-1 and 4-2 are packaging diagrams for the assemblies and subassemblies which are repairable at depot. Follow the numerical sequence on the diagram for proper packing.

4-3. UNPACKING. In all cases, unpacking is done by using the proper packing diagram and using the reverse sequence of steps.



URC-103-005

Figure 4-1. Packing and Unpacking General Use



URC-103-007

Figure 4-2. Packing and Unpacking Electrostatic Discharge Sensitive Components

SECTION V

MAINTENANCE OF ASSEMBLIES/SUBASSEMBLIES
OTHER REFERENCES

5-1. GENERAL. This section covers maintenance of assemblies and subassemblies of the URC-98/A, 99/A as listed in other TO publications.

5-2. POWER SUPPLY, 41PS1 MAINTENANCE. Maintenance for Power Supply 41PS1, P/N 538667-802, part of the Mounting Adapter MT-6165/URC, can be found in TO 49B3-39-3. Illustrated parts breakdown for the power supply can be found in TO 49B3-39-4.

5-3. OSCILLATOR, 41Y1, MAINTENANCE. Maintenance for the Rubidium Oscillator 41Y1 P/N 626404-2, part of Mounting Adapter MT-6165/URC, can be found in TO 49B3-39-3. Illustrated parts breakdown for the Rubidium Oscillator can be found in TO 49B3-39-4.

5-4. MNOS MEMORY MAINTENANCE. Maintenance for the MNOS memory P/N 912323-802, part of URC-98/A, 99/A can be found in TO 12R2-2ARC164-33. TO 12R2-2ARC164-34 provides the illustrated parts breakdown for the MNOS memory.

5-5. POWER SUPPLY, CIRCUIT CARD ASSEMBLY MAINTENANCE. Maintenance for power supply P/N 918837-8002, part of URC-98/A, 99/A can be found in TO 12R2-2ARC164-33. Illustrated parts breakdown for the power supply can be found in TO 12R2-2ARC164-34.

5-6. ADAPTER CONTROL MAINTENANCE. Maintenance for the Adapter Control MX-9708/ARC-164 P/N 918850-801, part of URC-98/A, can be found in TO 12R2-2ARC164-33. TO 12R2-2ARC164-34 provides an illustrated parts breakdown for the adapter control.

5-7. WIRING HARNESS, W6, MAINTENANCE. Maintenance for Wiring harness W6, CX-12999/ARC-164 P/N 466598-801, part of URC-98/A, can be found in TO 12R2-2ARC164-33. Illustrated parts breakdown of the wiring harness can be found in TO 12R2-2ARC164-34

SECTION VI

DIVIDER/AUDIO CIRCUIT CARD ASSEMBLY MAINTENANCE

6-1. GENERAL. This section contains maintenance instructions for the Divider/Audio Assembly. Maintenance instructions consist of minimum performance and fault isolation tests.

CAUTION

Do not remove or install subassembly in test fixture with power applied or damage to equipment may result.

NOTE

Subassemblies shipped in nonapproved containers may contain multiple failures due to mishandling.

NOTE

Prefix component reference designations on the Divider/Audio Assembly by 41A2.

6-2. MAINTENANCE PROCEDURES. Upon receipt of a Divider/Audio Assembly for repair, perform the following procedures:

- a. Perform visual inspection. Replace defective components.
- b. Perform a minimum performance test.
- c. If malfunction is indicated, perform fault isolation tests as directed.
- d. Replace defective component then repeat minimum performance test.

6-3. MINIMUM PERFORMANCE TEST. Table 6-1 is a minimum performance test of the Divider/Audio Assembly. This test provides a check of the assembly operation to determine correct operation, malfunction, or to verify repairs. The test setup for the assembly is shown in figure 6-1.

6-4. FAULT ISOLATION TESTS. Table 6-2 contains fault isolation tests of the circuits of the Divider/Audio Assembly. These tests are used to troubleshoot a malfunction to a component or an active circuit of the assembly.

6-5. SUPPLEMENTARY INFORMATION. Figure FO-3 is a component location diagram of the Divider/Audio Assembly. Figure FO-2 is the schematic diagram of the assembly. These two diagrams are necessary to perform the Minimum Performance and Fault Isolation Tests.

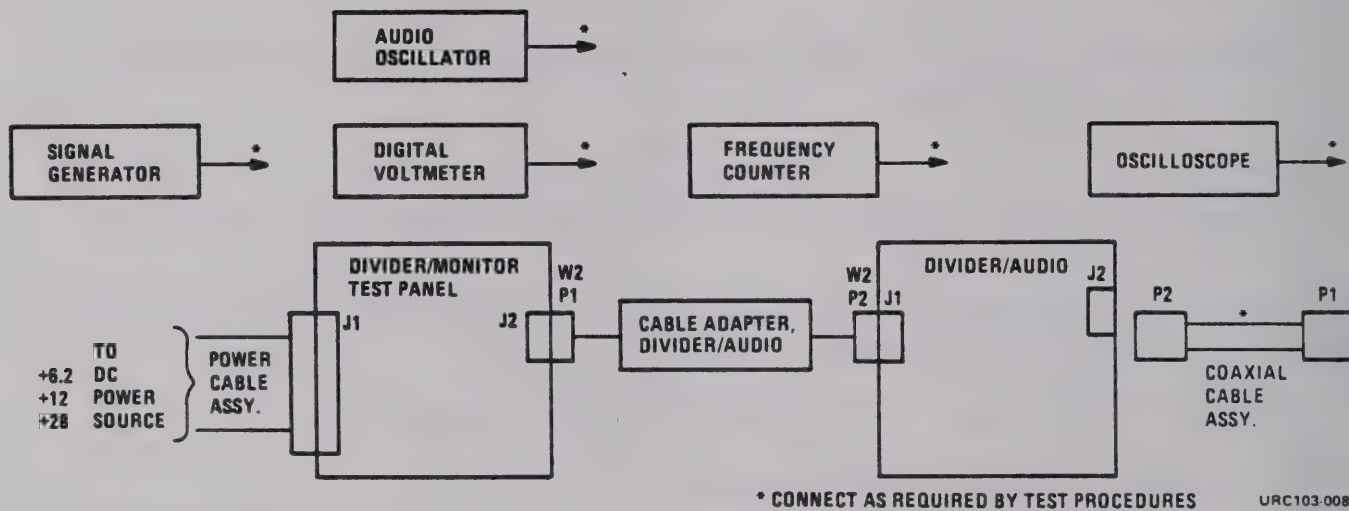


Figure 6-1. Divider/Audio Minimum Performance Fault Isolation Test Setup

Table 6-1. Divider/Audio Assembly Minimum Performance Tests

Step	Procedure	Normal indication	Fault location
1.	<p>Visually inspect the divider/audio board for physical damage, i.e., broken or burned parts, lifted or broken traces, corrosion, etc.</p> <p style="text-align: center;">NOTE</p> <p>Test jacks, controls and indicators listed in this table are on the DIVIDER/AUDIO Test Panel unless otherwise noted.</p> <div style="text-align: center; border: 1px dashed black; padding: 2px; width: fit-content; margin: 10px auto;"> CAUTION </div> <p>Observe caution when connecting coax cables to J2 on the circuit card.</p>	<p>No physical damage</p> <p style="text-align: center;">NOTE</p> <p>Ignore status of indicators that are not listed.</p> <p style="text-align: center;">NOTE</p> <p>All dc voltages are $\pm 5\%$ unless otherwise specified.</p>	
2.	Connect cable adapter connector W2 P2 to divider/audio board connector J1 and W2P1 cable adapter to DIVIDER/MONITOR test panel jack J2. Set all test panel switches to OFF. Connect power cable to test panel connector J1 and to power source.	None	
3.	Set POWER switch S1 to ON. Set 28 VDC POWER switch S8 to EXTERNAL.	+6 VDC, +12 VDC, Battery COND. and +28 VDC indicators light.	Power indicators do not light; see T.O. 33D7-71-27-1-2. Battery Cond: R33
4.	Connect digital voltmeter (DVM) to DC/DC INPUT jack J22. Set S1 (Jeep Bat), cable adapter, to ON.	EXTERNAL power indicator lights. Voltmeter indicates $+21 \pm 1.4$ vdc.	EXTERNAL power indicator not lit: CR12. Voltmeter incorrect: U1 or associated circuitry.
5.	Step 4 except set S1 (Jeep Bat) to off and set S2 (pin I) to ON.	S1 off: External off S2 on: External on	External power indicator not lit: CR11

Table 6-1. Divider/Audio Assembly Minimum Performance Tests-Continued

Step	Procedure	Normal indication	Fault location
6.	Set S2 (Pin I) to off and set S3 (Pin K) to ON.	S2 off: External off S3 on: External on.	External power indication not correct: CR10
7.	Set S3 (Pin K), cable adapter, to off.	None	None
8.	Connect positive lead of DVM to collector Q1. On test panel set S2 (OSC lock) to ON.	0 \pm 0.5 Vdc	Table 6-2, step 2.
9.	Connect positive meter lead to Test Panel J9.	5 \pm 0.5 Vdc	Incorrect meter indication: CR2 or associated circuitry.
10.	Connect positive meter lead to anode CR1.	+6.2 \pm 0.5 Vdc	Incorrect meter indication: CR1 or associated circuitry.
11.	Connect DVM positive lead to J1-U.	+12 \pm 0.5 Vdc	R34 or associated circuitry.
12.	Connect signal generator to divider/audio board connector J2. Adjust for .75 vrms (10 dB) at 10 MHz. Connect the frequency counter and oscilloscope to J19.	800 kHz 5V p-p \pm 1.0V p-p	Table 6-2, step 10.
13.	Connect DVM positive lead to Test Panel J8.	Voltmeter indicates \geq +3.8 Vdc.	Table 6-2, step 15.
14.	Connect frequency counter to test panel J19. Connect positive lead of DVM to test panel J8. Vary signal frequency of signal generator to 13.5 MHz then to 7 MHz.	Frequency counter at J19 (800 kHz out) varies proportionally to input. Voltmeter indicator 0 Vdc at the extremes.	Frequency counter does not respond accordingly: table 6-2, step 10 thru 14 (exception: the normal indication column should vary proportionally with input signal generator 7 MHz to 13.5 MHz). Meter indication incorrect at 13.5 MHz signal: step 20. Meter indication incorrect at 7 MHz: step 24.

Table 6-1. Divider/Audio Assembly Minimum Performance Tests-Continued

Step	Procedure	Normal indication	Fault location
15.	Connect audio oscillator to J3 AUDIO IN (cable adapter). Set oscillator amplitude to 1.5V p-p. Connect oscilloscope to J4 AUDIO OUT (cable adapter).	Oscilloscope shows audio signal 1000 Hz present 1.4V p-p $\pm 10\%$.	Incorrect signal: U4 or associated circuitry.
16.	Set S2 test panel to off. Connect positive lead of DVM to J21.	27.5 ± 0.5 Vdc	Incorrect indication: CR3 or associated circuitry.

Table 6-2. Divider/Audio Assembly Fault Isolation Tests

Step	Procedure	Normal indication	Fault location
1.	Perform steps 1 and 2 of table 6-1.	See table 6-1.	See table 6-1.
2.	Same as table 6-1, step 8.	Same as table 6-1, step 8.	Meter indication 28 Vdc: Q1 refer to step 3.
3.	Connect positive lead of DVM to base Q1.	0.7 ± 0.2 Vdc	Correct meter indication: replace Q1. Incorrect DVM indication, step 4.
4.	Connect positive lead of meter to Pin U3-7.	$+10.5 \pm 1.0$ Vdc	Correct meter indication: R11 Incorrect meter indication, step 7.
5.	Connect positive lead of meter to pin U3-5 then U3-6.	U3-5: $+10.5 \pm 1$ Vdc U3-6: 5.6 ± 0.5 Vdc	Correct meter indication U3-5 and U3-6: U3 Incorrect meter indication U3-6: VR2 Incorrect meter indication U3-5: 9 Vdc or less R10 open or circuitry, 12 Vdc or more R13, Q2 circuit step 8.
6.	Connect positive lead of DVM to base of Q2. Test panel switch S2 S2 off then on.	S2 Off - 0.7 ± 0.2 Vdc S2 On - 0 ± 0.5 Vdc	Correct meter indication: Table 6-1, step 9. Incorrect meter indication, step 7.
7.	Connect positive lead of DVM to pin U2-4. Test panel switch S2 off then on.	≥ 3.8 Vdc, S2 off 0 ± 0.5 Vdc, S2 on	Correct meter indication: R30. Incorrect meter indication: Step 8.

Table 6-2. Divider/Audio Assembly Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
8.	Connect positive lead of DVM to U2-6.	0 \pm 0.5 Vdc	Correct meter indication: Step 9. Incorrect meter indication: U2, VR1 and CR4 circuit.
9.	Connect positive lead to U2-5. Test panel switch S2 off then on.	0 \pm 0.5 Vdc, S2 off 5 \pm 0.5 Vdc, S2 on	Correct meter indication: U2. Incorrect meter indication: U2, R12 circuitry.
10.	Adjust signal generator for 0.75 vrms, 10 MHz. Connect oscilloscope to U8-8.	800 kHz 5V p-p \pm 1.0V	Present: R31, R24 circuitry. Absent: Step 11
11.	Connect oscilloscope to U8-9, 10, 12 or 13.	800 kHz 5V p-p \pm 1.0V	Present: U8 or associated circuitry. Absent: Step 12
12.	Connect oscilloscope and frequency counter to U9-13.	4 MHz 5V p-p \pm 1.0V	Present: U9 or associated circuitry U6 and U10. Absent: Step 13
13.	Connect oscilloscope to U7-1 then U7-2.	5 MHz U7-1, 1.0 MHz U7-2 @ 5V p-p \pm 1.0V	Present U7-1 and U7-2: U7 Absent U7-1: Step 14 Absent U7-2: U5, U6, U7 circuit.
14.	Connect oscilloscope to U5-1.	10 MHz 5V p-p \pm 1.0V	Present: U5 Absent: Q3, Q4 and associated circuitry.
15.	Connect positive lead of DVM to base Q5.	0 \pm 0.5 Vdc	Present: Q5, R29 circuitry. Absent: Step 16

Table 6-2. Divider/Audio Assembly Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
16.	Connect positive lead of DVM to U10-12.	0 ± 0.5 Vdc	Present: R28 Absent: Step 17
17.	Connect positive lead of DVM to U10-1 then U10-2 then U10-13.	U10-1: $+5 \pm 0.5$ Vdc U10-2: $+5 \pm 0.5$ Vdc U10-13: $+5 \pm 0.5$ Vdc	Present all: U10 Absent U10-1 only: Step 18 Absent U10-2: U11 Absent U10-13: Step 19
18.	Connect positive lead of DVM to U7-11.	0 ± 0.5 Vdc	Meter indication correct: U13 or associated circuitry. Meter indication incorrect: U7
19.	Connect positive lead of DVM to U11-12.	$+1.5 \pm 0.3$ Vdc	Present: U12 or associated circuitry. Absent: U11 or associated circuitry.
20.	Set signal generator at 13.5 MHz. Connect positive lead of DVM at base of Q5.	$+0.7 \pm 0.2$ Vdc	Present: Q5 or associated circuitry. Absent: Step 21
21.	Connect positive lead of DVM U10-12.	≥ 3.8 Vdc	Present: R28 Absent: Step 22
22.	Connect positive lead of DVM U10-13.	$+1.2 \pm 0.2$ Vdc	Present: U10 Absent: Step 23
23.	Connect positive lead of DVM U11-12.	0 ± 0.5 Vdc	Present: U12 Absent: U11
24.	Set signal generator at 7 MHz. Connect positive lead to base of Q5.	0.7 ± 0.2 Vdc	Present: Q5 or associated circuitry. Absent: Step 25

Table 6-2. Divider/Audio Assembly Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
25.	Connect positive lead to U10-12.	≥ 3.8 Vdc	Present: R28 Absent: Step 26
26.	Connect positive lead U10-2.	$+4.7 \pm 0.3$ Vdc	Present: U10 Absent: U11 or associated circuitry.

SECTION VII

MOUNTING BASE MAINTENANCE

7-1. GENERAL. This section contains maintenance instructions for the Mounting Base, of the Mounting Adapter MT-6165/URC.

7-2. MAINTENANCE, MOUNTING BASE. Maintenance of the Mounting Base P/N 810753-801 is limited to visual inspections concurrent with current maintenance and repair capabilities of the facility.

SECTION VIII

AUDIO SWITCHING ASSEMBLY C-10905/URC-99 MAINTENANCE

8-1. GENERAL. This section contains maintenance instructions for Audio Switching Assembly MX P/N 810623-801 (switching unit 810586-801 less memory and power supply).

CAUTION

If the assembly or subassembly under test is received and is not contained in an approved shipping container, any failures found cannot be assumed to have caused the original field failure. Failures under these conditions may have been caused by mishandling.

Assemblies or subassemblies must not be removed from or inserted into test fixtures with power applied.

8-2. AUDIO SWITCHING ASSEMBLY MX P/N 810623-801. Maintenance instructions for the audio switching assembly consist of a minimum performance and fault isolation test. Table 8-1 is a combined minimum performance test and fault isolation test. The Procedure and Normal indication columns are to be used for a minimum performance test. The complete procedure, including Fault Location information, is to be used as a fault isolation test when an audio switching assembly and/or switching unit is malfunctioning.

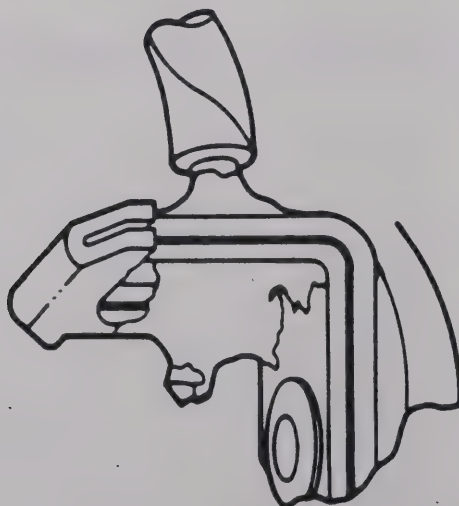
8-3. SWITCHING UNIT WIRING METHOD. The straight through lead concept for wiring in the switching unit is illustrated in figure 8-1.

8-4. AUDIO INTERFACE CIRCUIT CARD MAINTENANCE. Maintenance for the audio circuit card assembly, P/N 810756-801, consist basically of point-to-point contact resistance coupled with normal workbench procedures regarding the passive components of the circuit card. Figures FO-4 and FO-6 provide the diagram schematics (containing the audio circuit card) and component location diagram respectively.

8-5. SUPPLEMENTARY INFORMATION. A parts location diagram (fig. FO-5) and a schematic diagram (fig. FO-4) are provided to supplement maintenance procedures of audio switching assembly.

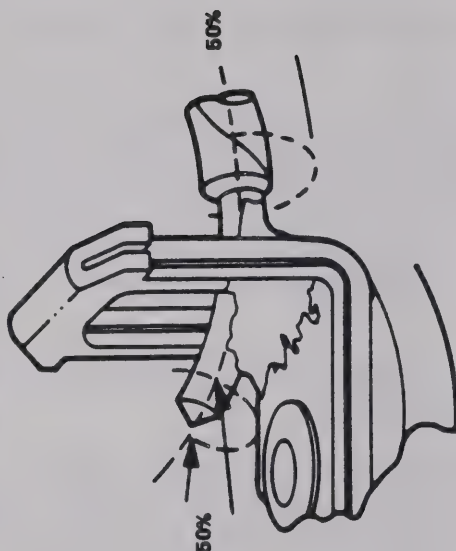
8-6. DISASSEMBLY. Disassembly procedures are outlined in TO 12R2-2URC-102.

THIS FIGURE COVERS THE ACCEPTANCE CRITERIA FOR WIRES OR LEADS INSERTED THROUGH A HOLE OR SLOT IN THE TERMINAL AND NOT MECHANICALLY AFFIXED TO THE TERMINAL.



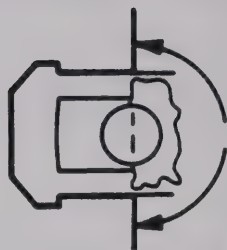
A WETTED SOLDER FILLET IS PRESENTED AROUND THE ENTIRE CIRCUMFERENCE OF THE WIRE OR LEAD AND IS WETTED TO TERMINAL ON BOTH SIDES. (FRONT AND BACK)

DESIRED



A WETTED SOLDER FILLET IS VISIBLE ON BOTH SIDES OF THE TERMINAL FOR AT LEAST 50% OF THE LEAD CIRCUMFERENCE.

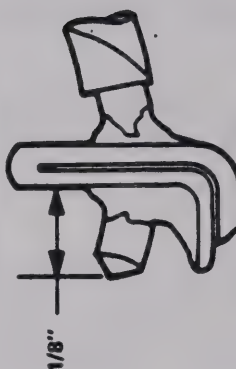
MINIMUM ACCEPTABLE



50% OF LEAD OR WIRE CIRCUMFERENCE HAS A WETTED SOLDER FILLET TO THE TERMINAL. (FRONT & BACK)

MIN ACCEPT

LEAD EXTENSION



DOES NOT EXCEED 1/8"

MAX ACCEPTABLE

URC-103-021

Figure 8-1. Switching Unit Wiring Method

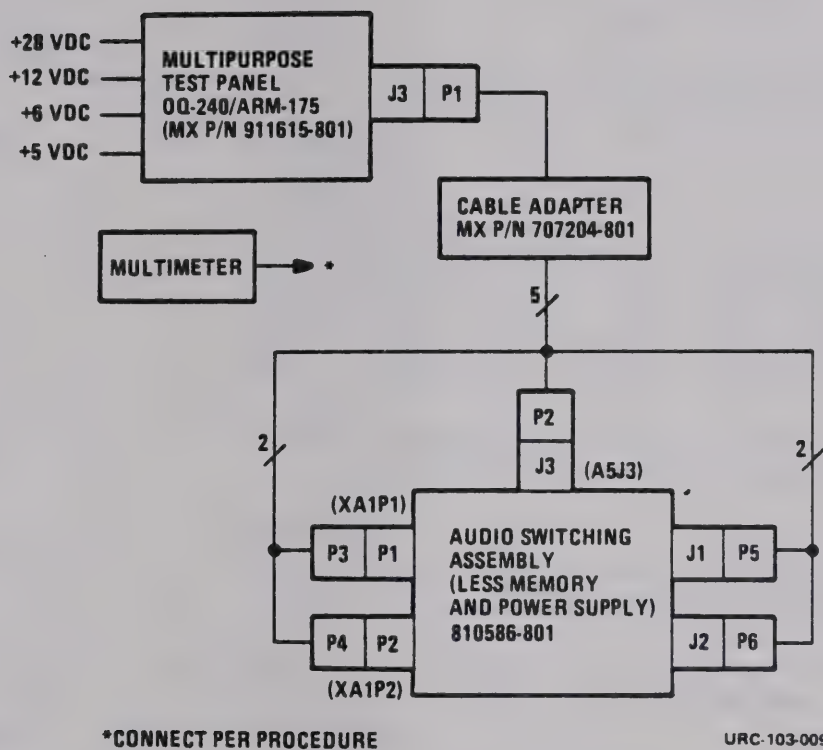


Figure 8-2. Typical Test Set, C-10905/URC-99 Switching Unit

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests

Step	Procedure	Normal indication	Fault location
1.	<p>Connect switching unit to be tested and cable adapter to multipurpose test panel as shown in figure 8-2.</p> <p style="text-align: center;">NOTE</p> <p>The following steps (2 through 8) should be performed with power off.</p> <p style="text-align: center;">NOTE</p> <p>The switching unit referred to in the following steps is the switching unit under test, not the switching unit that is part of the test panel (unless otherwise specified).</p>		
2.	Connect an ohmmeter across multipurpose test panel test points TP1 (J17) and TP2 (J18).		
3.	On multipurpose test fixture, set the TP SELECTOR switch to position 2.		
4.	On switching unit, vary VOL control from full counterclockwise to full clockwise.	Resistance varies 10K to $<5\Omega$.	Volume control potentiometer (R3) or connecting lines.
5.	On multipurpose test panel, set TP SELECTOR switch to position 3.		
6.	On switching unit, set LIGHTS/OFF/TOD SEND switch (S15) to TOD SEND then to OFF.	Zero ohms, Infinite ohms	S15 or connecting lines.
7.	On multipurpose test panel, set TP SELECTOR switch to position 4.		
8.	Install a jumper wire on cable adapter J4 and J5 (remove jumper after test).	300 \pm 15 ohms	R1 (A3A1) Audio Interface or connecting lines.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location																												
9.	On test panel set switches as follows: <table><tr><td><u>Switch</u></td><td><u>Position</u></td></tr><tr><td>XMIT KEY/TAKE CONTROL</td><td>TAKE CONTROL</td></tr><tr><td>CONTINUITY/ENERGIZE</td><td>OFF</td></tr><tr><td>TEST SELECTOR</td><td>6</td></tr><tr><td>Function Selector</td><td>OFF</td></tr><tr><td>(Test panel switching unit)</td><td></td></tr><tr><td>PANEL LAMPS</td><td>As per con-</td></tr><tr><td>Switch</td><td>figuration</td></tr><tr><td></td><td>(801 and 802;</td></tr><tr><td></td><td>28 Volts dc/</td></tr><tr><td></td><td>803, 804 and</td></tr><tr><td></td><td>805; 5 Volts</td></tr><tr><td></td><td>dc)</td></tr><tr><td>POWER</td><td>ON</td></tr></table>	<u>Switch</u>	<u>Position</u>	XMIT KEY/TAKE CONTROL	TAKE CONTROL	CONTINUITY/ENERGIZE	OFF	TEST SELECTOR	6	Function Selector	OFF	(Test panel switching unit)		PANEL LAMPS	As per con-	Switch	figuration		(801 and 802;		28 Volts dc/		803, 804 and		805; 5 Volts		dc)	POWER	ON		
<u>Switch</u>	<u>Position</u>																														
XMIT KEY/TAKE CONTROL	TAKE CONTROL																														
CONTINUITY/ENERGIZE	OFF																														
TEST SELECTOR	6																														
Function Selector	OFF																														
(Test panel switching unit)																															
PANEL LAMPS	As per con-																														
Switch	figuration																														
	(801 and 802;																														
	28 Volts dc/																														
	803, 804 and																														
	805; 5 Volts																														
	dc)																														
POWER	ON																														
10.	On cable adapter, set switches as follows: <table><tr><td><u>Switch</u></td><td><u>Position</u></td></tr><tr><td>S1</td><td>any</td></tr><tr><td>S2</td><td>off</td></tr></table>	<u>Switch</u>	<u>Position</u>	S1	any	S2	off																								
<u>Switch</u>	<u>Position</u>																														
S1	any																														
S2	off																														
11.	On switching unit set switches as follows: <table><tr><td><u>Switch</u></td><td><u>Position</u></td></tr><tr><td>Function Selector</td><td>MAIN</td></tr><tr><td>MANUAL-PRESET-GUARD (M-P-G)</td><td>MANUAL</td></tr><tr><td>BW</td><td>NB</td></tr><tr><td>SQUELCH</td><td>ON</td></tr><tr><td>MANUAL FREQUENCY SELECTOR</td><td>200.000</td></tr></table> LIGHTS/OFF/TOD SEND switch to LIGHTS then OFF	<u>Switch</u>	<u>Position</u>	Function Selector	MAIN	MANUAL-PRESET-GUARD (M-P-G)	MANUAL	BW	NB	SQUELCH	ON	MANUAL FREQUENCY SELECTOR	200.000	Proper illumination, then off.	Illumination panel S15 or connecting lines.																
<u>Switch</u>	<u>Position</u>																														
Function Selector	MAIN																														
MANUAL-PRESET-GUARD (M-P-G)	MANUAL																														
BW	NB																														
SQUELCH	ON																														
MANUAL FREQUENCY SELECTOR	200.000																														
12.	Set TEST SELECTOR switch to position 3.	LAMP 1 on	Check continuity from XA1P1-3 to XA1P1-1.																												
13.	Set TEST SELECTOR switch to position 4.	LAMP 1 on	Check continuity from XA1P2-22 to chassis ground.																												

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
14.	Set TEST SELECTOR switch to position 5.	LAMP 1 on	Check continuity from XA1P2-20 to chassis ground.
15.	Set TEST SELECTOR switch to position 6 and depress PRESET switch.	LAMP 1 on	1. Make the following continuity checks. XA1P2-6 to S11-1 S11-2 to XA1P2-18 XA1P2-12 to S1-4 (Front) S1-7 (Front) to XA1P2-15 2. Check S1 and S11. 3. Repair/replace as required.
16.	Release PRESET switch.	LAMP 1 off	
17.	Set switching unit SQUELCH switch to OFF position and TEST SELECTOR switch to 7.	LAMP 1 on	1. Make the following continuity checks: XA1P2-19 to S4-2 S4-3 to XA1P2-17 2. Check S4. 3. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
18.	Set switching unit SQUELCH switch to ON; the T-2-3-A switch to "2", and BW switch to WB; set switching unit T-2-3-A switch to "3".	LAMP 1 on for both positions "2" and "3".	<ol style="list-style-type: none"> 1. If LAMP 1 is off for both positions "2" and "3", check continuity from S3-1 to XA1P2-17 and from S9-12 to ground. 2. If LAMP 1 is off for position "2" only, check continuity from S3-C to S9-8 (through diode CR1). 3. If LAMP 1 is off for position "3" only, check continuity from S3-C to S9-9. 4. Check switches S3 and S9. 5. Repair/replace as required.
19.	Set switching unit BW switch to NB and hold T-2-3-A switch in "T".	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-17 to S9-7 (through diode CR3). 2. Check switch S9. 3. Repair/replace as required.
20.	Release T-2-3-A switch to "2".		
21.	Set TEST SELECTOR switch to 8 and switching unit MPG switch to MANUAL.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from S1-12 (front) to ground. 2. Check continuity from S1-1 (front) to XA1P1-5. 3. Check switch S1. 4. Replace/repair as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
22.	Set switching unit MPG switch to PRESET and T-2-3-A switch to "A".	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from S1-2 (front) to S9-6. 2. Check continuity from S9-4 to XA1P1-5. 3. Check switch S9. 4. Repair/replace as required.
23.	Hold switching unit T-2-3-A switch in "T".	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from S9-1 to XA1P1-5. 2. Check switch S9. 3. Repair/replace as required.
24.	Release T-2-3-A switch to "2".		
25.	Set TEST SELECTOR switch to 9 and MPG switch to GUARD.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P1-6 to S1-3 (front). 2. Check switch S1. 3. Repair/replace as required.
26.	Set MPG switch to MANUAL and T-2-3-A switch to "A".	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P1-6 to S9-10. 2. Check switch S9. 3. Repair/replace as required.
27.	Hold switching unit T-2-3-A switch in "T".	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P1-6 to S9-7 (through diode CR2). 2. Check switch S9. 3. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
28.	Release T-2-3-A switch to "2".		
29.	Set Preset Channel Selector switch to position 1 and MPG switch to PRESET.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-15 to S1-7 (front). 2. Check continuity from S1-5 (front) to S11-5. 3. Check continuity from S11-6 to S12-2. 4. Check continuity from S12-3 to XA1P1-9. 5. Check switches S1, S11, and S12. 6. Repair/replace as required.
30.	Set MPG switch to MANUAL and depress PRESET switch.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-15 to S1-7 (front). 2. Check continuity from S1-4 (front) to XA1P2-12. 3. Check continuity from XA1P2-18 to S11-2. 4. Check continuity from S11-1 to XA1P2-6. 5. Check continuity from XA1P2-9 to S12-9. 6. Check continuity from S12-7 to XA1P1-4. 7. Check switches S1, S11, and S12. 8. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
31.	Repeat steps 29 and 30 with Preset Channel Selector switch in positions 2 through 9.	LAMP 1 on	1. Check switches S12 and S14. 2. Repair/replace as required.
32.	Repeat step 29 with Preset Channel Selector switch in position 20.	LAMP 1 on	1. Check switches S12 and S14. 2. Repair/replace as required.
33.	Repeat step 30 with Preset Channel Selector switch in position 20.	LAMP 1 on	1. Check switches S12 and S14. 2. Repair/replace as required.
34.	Set TEST SELECTOR switch to POSITION 10 and repeat step 29 with Preset Channel Selector switch in positions 10 through 19.	LAMP 1 on	1. Check continuity from S12-4 to XA1P1-7. 2. Check switches S12 and S14. 3. Repair/replace as required.
35.	Repeat step 30 with Preset Channel Selector switch in positions 10 through 19.	LAMP 1 on	1. Check continuity from S12-8 to XA1P1-8. 2. Check switches S12 and S14. 3. Repair/replace as required.
36.	Set TEST SELECTOR switch to POSITION 11.	LAMP 1 on	1. Check continuity from S1-1 (front) to J3-33. 2. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
37.	Set Function Selector switch to BOTH.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-19 to S2-4 (rear). 2. Check continuity from S2-6 (rear) to S1-6 (rear). 3. Check continuity from S1-5 (rear) to J3-9 (through A2CR-7). 4. Check switches S1 and S2. 5. Repair/replace as required.
38.	Set MPG switch to PRESET.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check switch S1. 2. Repair/replace as required.
39.	Set MPG switch to GUARD.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from J3-30 to S1-3 (rear). 2. Check continuity from S1-2 (rear) to J3-32. 3. Check switch S1. 4. Repair/replace as required.
40.	Set MPG switch to MANUAL and Function Selector switch to ADF.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from S2-5 (front) to J3-29 (through A2CR5). 2. Check continuity from S2-7 (front) to J3-34. 3. Check switch S2. 4. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
41.	Set Function Selector switch to MAIN and TEST SELECTOR switch to position 12; depress TONE switch. Then release TONE switch.	LAMP 1 on	<ol style="list-style-type: none"> 1. With the TONE switch depressed, check continuity from J3-22 to ground. 2. Check switch S5. 3. Repair/replace as required.
42.	Set S2 (cable adapter) to ON. Connect oscilloscope to cable adapter J6 and J7 (ground). Set oscilloscope vertical amp to .05 (X1 probe) and horizontal to .05 ms. Switch S1 through all three positions (C3, C6/C1, C2/C4, C5).	.17 \pm .05 ms triangular waveform in all three positions.	Any deviation from normal indication replace capacitors indicated by S1 position.
43.	Set SQUELCH switch to ON and TEST SELECTOR switch to position 13.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-19 to J3-25. 2. Repair/replace as required.
44.	Set TEST SELECTOR switch to position 14.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from XA1P2-19 to J3-37. 2. Repair/replace as required.
45.	Set TEST SELECTOR switch to position 15 and Function Selector switch to MAIN, BOTH, and ADF.	LAMP 1 on in all three positions.	<ol style="list-style-type: none"> 1. Check continuity from S2-3 (rear) to J3-28 (through A2CR4). 2. Check switch S2. 3. Repair/replace as required.
46.	Set Function Selector switch to OFF and MPG switch to GUARD.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity S1-6 (front) to XA1P2-3. 2. Check switch S1. 3. Repair/replace as required.

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
47.	Set TEST SELECTOR switch to position 16 and Function Selector switch to MAIN; depress the TONE switch.	LAMP 1 on	<ol style="list-style-type: none"> 1. With the TONE switch depressed, check continuity from S2-2 (front) to ground (through A2CR6). 2. Check continuity from S2-1 (front) to J3-13. 3. Check switches S2 and S5. 4. Repair/replace as required.
48.	Release TONE switch and set test panel XMT KEY/TAKE CONTROL switch to XMT KEY.	LAMP 1 on	<ol style="list-style-type: none"> 1. Check continuity from J3-19 to S2-2 (front). 2. Check switch S2. 3. Repair/replace as required.
49.	Set test panel XMT KEY/TAKE CONTROL switch to TAKE CONTROL.		
50.	Set Function Selector switch to OFF. Set Manual Frequency Selector to 377.700.		

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

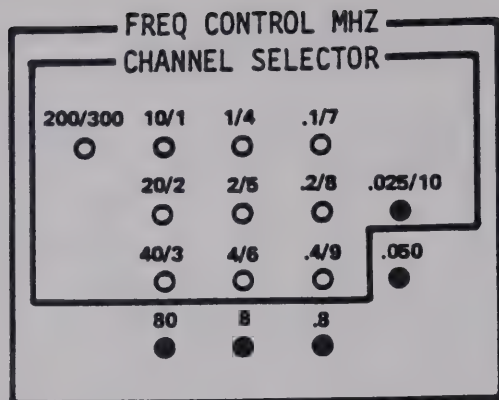
Step	Procedure	Normal indication	Fault location
51.	Set MPG switch to MANUAL and rotate Preset Channel Selector to positions 1 through 10. Return MPG to Preset.	CHANNEL SELECT display as in figures 6-3C through 6-3L.	<p>1. If all LED's do not indicate properly, check continuity from S11-3 to S14-C.</p> <p>2. If individual LED's do not indicate properly, check continuity as follows.</p> <p>Channel 1/11 S14-2 to XA1P2-1</p> <p>Channel 2/12 S14-2 to XA1P2-4</p> <p>Channel 3/13 S14-3 to XA1P2-7</p> <p>Channel 4/14 S14-4 to XA1P2-10</p> <p>Channel 5/15 S14-5 to XA1P2-13</p> <p>Channel 6/16 S14-6 to XA1P2-14</p> <p>Channel 7/17 S14-7 to XA1P2-11</p> <p>Channel 8/18 S14-8 to XA1P2-8</p> <p>Channel 9/19 S14-9 to XA1P2-5</p> <p>Channel 10/20 S14-10 to XA1P2-2</p> <p>3. Check switches S11 and S14.</p> <p>4. Repair/replace as required.</p>

Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure		Normal indication	Fault location
52.	Rotate each Manual Frequency Selector through all positions as follows:		FREQ CONTROL MHZ display as follows:	
	a. 300	T-2-3-A switch	a. 200/300 LED on	If LED is on incorrectly, check continuity from S9-8 to XA1P1-16. If LED is off incorrectly, check for short at XA1P1-16.
	b. 200		b. 200/300 LED off.	
	c. 80	Ten's digit switch	c. 80 LED on	If LED's are on incorrectly, check continuity from: S8-2 (front) to XA1P1-22 (80) S8-2 (rear) to XA1P1-10 (40) S8-10 (rear) to XA1P1-15 (20) S8-1 (front) to XA1P1-11 (10) If LED's are off incorrectly, check for shorts at: XA1P1-22 (80) XA1P1-10 (40) XA1P1-15 (20) XA1P1-11 (10)
	d. 70		d. 40, 20, and 10 LED's on	
	e. 60		e. 40 and 20 LED's on	
	f. 50		f. 40 and 10 LED's on	
	g. 40		g. 40 LED on	
	h. 30		h. 20 and 10 LED's on	
	i. 20		i. 20 LED on	
	j. 10		j. 10 LED on	
	k. 8	Units digit switch	k. 8 LED on	If LED's are on incorrectly, check continuity from: S7-2 (front) to XA1P1-25 (8) S7-2 (rear) to XA1P1-24 (4) S7-10 (rear) to XA1P1-17 (2) S7-1 (front) to XA1P1-20 (1) If LED's are off incorrectly, check for shorts at:
	l. 7		l. 4, 2, and 1 LED's on	
	m. 6		m. 4 and 2 LED's on	
	n. 5		n. 4 and 1 LED's on	
	o. 4		o. 4 LED on	
	p. 3		p. 2 and 1 LED's on	
	q. 2		q. 2 LED on	
	r. 1		r. 1 LED on	

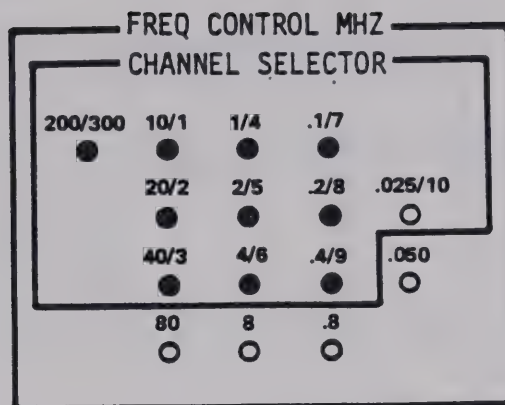
Table 8-1. Switching Unit Minimum Performance and Fault Isolation Tests-Continued

Step	Procedure	Normal indication	Fault location
52.- Cont			XA1P1-25 (8) XA1P1-24 (4) XA1P1-17 (2) XA1P1-20 (1)
	s. 0.8 t. 0.7 u. 0.6 v. 0.5 Tenths digit switch w. 0.4 x. 0.3 y. 0.2 z. 0.1	s. .8 LED on t. .4, .2, and .1 LED's on u. .4 and .2 LED's on v. .4 and .1 LED's on w. .4 LED on x. .2 and .1 LED's on y. .2 LED on z. .1 LED on	If LED's are on incorrectly, check continuity from: S6-2 (front) to XA1P1-19 (0.8) S6-2 (rear) to XA1P1-13 (0.4) S6-10 (rear) to XA1P1-14 (0.2) S6-1 (front) to XA1P1-12 (0.1) If LED's are off incorrectly, check for shorts at: XA1P1-19 (0.8) XA1P1-13 (0.4) XA1P1-14 (0.2) XA1P1-12 (0.1)
	aa. 0.075 ab. 0.050 Hundredths/thousandths digit switch ac. 0.025 ad. 0.000	aa. 0.050 and .025 LED's on ab. .050 LED on ac. .025 LED on ad. 0.050 and .025 LED's off	If the .050 LED is is on incorrectly, check continuity from: S10-1B to XA1P1-23 S10-2B to XA1P1-23 If the .050 LED is is on incorrectly, check for short at XA1P1-18. If .025 LED is off incorrectly, check continuity from: S10-2A to XA1P1-18 S10-4A to XA1P1-18
53.	Test completed. Turn off equipment and disconnect.		



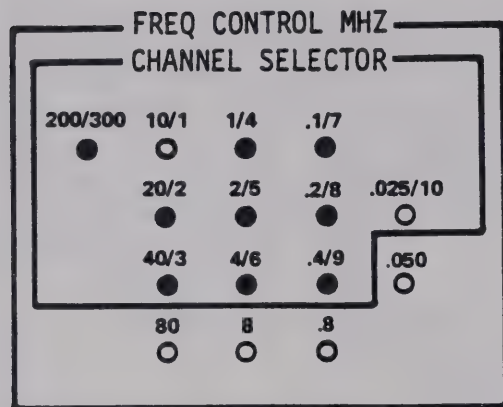
● LED ON

A. 288.875 MHz



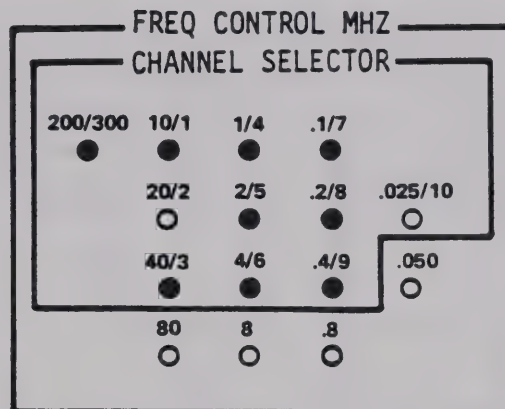
● LED ON

B. 377.700 MHz



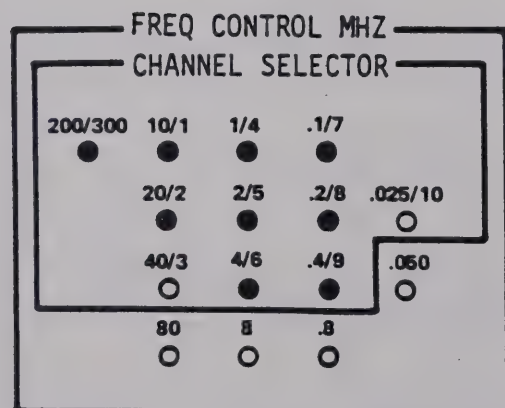
● LED ON

C. Channel 1



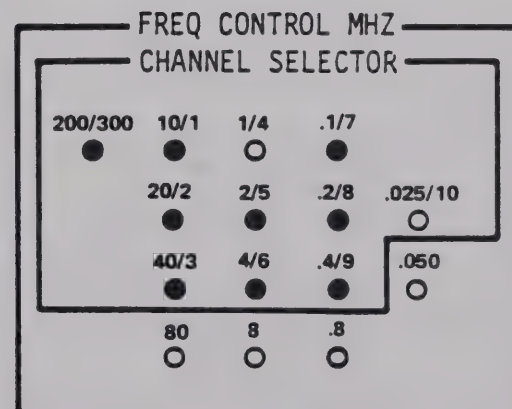
● LED ON

D. Channel 2



● LED ON

E. Channel 3

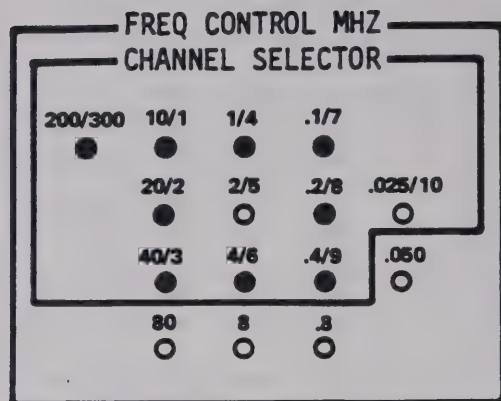


● LED ON

F. Channel 4

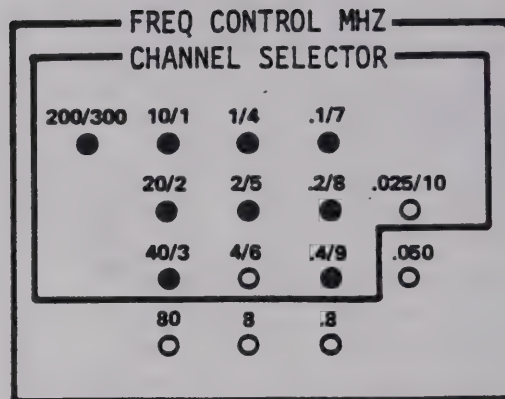
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Figure 8-3. Frequency/Channel Display (Sheet 1 of 2)



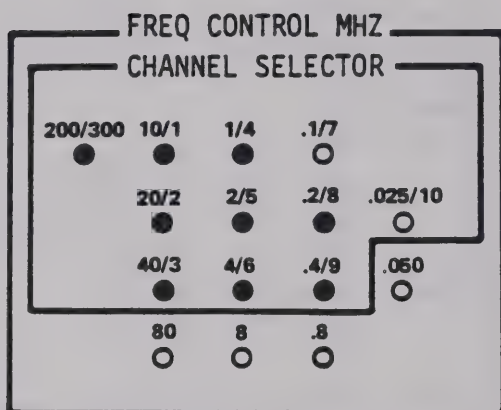
● LED ON

G. Channel 5



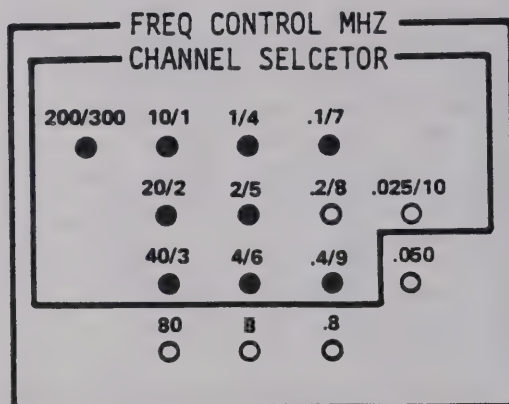
● LED ON

H. Channel 6



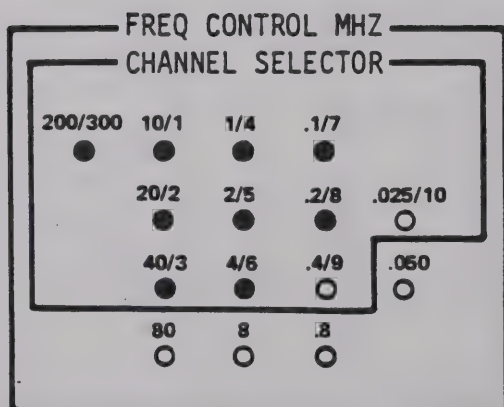
● LED ON

I. Channel 7



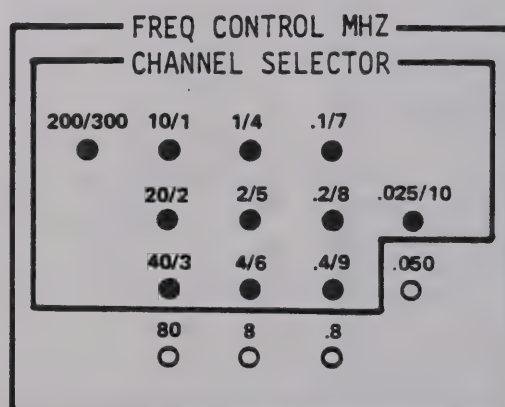
● LED ON

J. Channel 8



● LED ON

K. Channel 9



● LED ON

L. Channel 10

URC-103-022-2

Figure 8-3. Frequency/Channel Display (Sheet 2 of 2)

SECTION IX

SWITCHING UNIT, C-10904/URC-98 MAINTENANCE

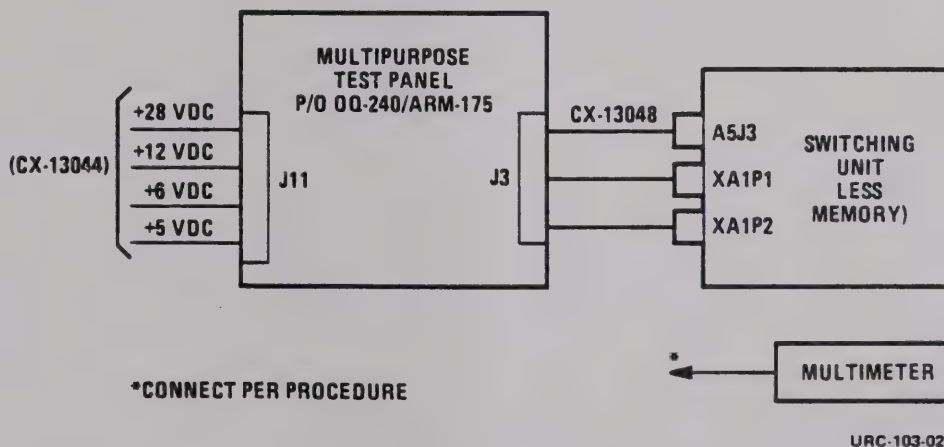
9-1. GENERAL. This section contains maintenance instructions for Frequency Channel Switching Unit URC-98 P/N 810267-801 (switching unit P/N 810768-801 less memory).

CAUTION

If the assembly or subassembly under test is received and is not contained in an approved shipping container, any failures found cannot be assumed to have caused the original field failure. Failures under these conditions may have been caused by mishandling.

Assemblies or subassemblies must not be removed from or inserted into test fixtures with power applied.

9-2. SWITCHING UNIT URC-98. Maintenance instructions for the switching unit consists of a minimum performance and fault isolation test. The procedures can be found in applicable sections of TO 12R2-2ARC164-33. Figure 9-1 is a typical test setup for minimum performance and fault isolation tests. The Procedure and Normal indication columns are to be used for a minimum performance test. The complete procedure, including Fault Location information, is to be used as a fault isolation test when a switching unit is malfunctioning. Figure FO-10 is a schematic diagram of the URC-98 switching unit.



URC-103-023

Figure 9-1. Switching Unit C-10904/URC-98 Minimum Performance and Fault Isolation Test Setup

SECTION X

WIRING HARNESS URC-99/A MAINTENANCE

10-1. GENERAL. This section contains maintenance procedures for Wiring Harness P/N 565669-801, for the URC-99/A.

10-2. MAINTENANCE. Maintenance for the wiring harness consists of point-to-point continuity checks. Figure FO-8 is a diagram schematic of the wiring interconnect.

10-3. AUDIO FILTER CIRCUIT CARD. Maintenance of the audio filter circuit card, part of the wiring harness, is of the same procedure as the wiring harness. The circuit card consists of passive components, thus basic work bench procedures are required for maintenance or repair. Figure FO-8 contains the schematic diagram of the audio circuit card. Figure FO-9 is a component location diagram for the audio filter circuit card.

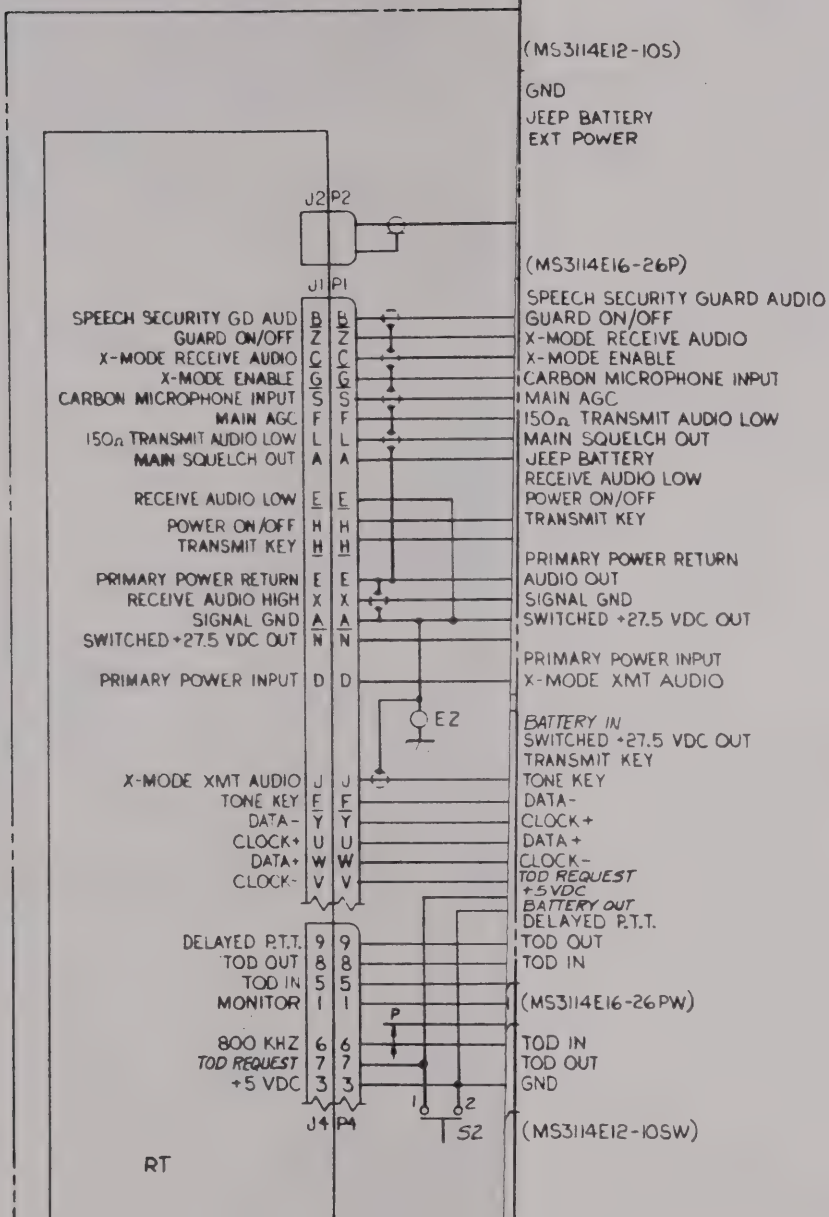
SECTION XI

FOLDOUT ILLUSTRATIONS

11-1. GENERAL. This section contains foldout illustrations referenced throughout this manual. Table 11-1 lists these illustrations.

Table 11-1. Index of Foldout Illustrations

Figure	Title
FO-1	Diagram Schematic, MT-6165/URC
FO-2	Diagram Schematic, Divider/Audio, MT-6165/URC
FO-3	Component Location Diagram, Divider/Audio, MT-6165/URC
FO-4	Diagram Schematic, Switching Audio Plate C-10905/URC-99
FO-5	Component Location Diagram, Panel Assembly, Switching Unit C-10905/URC-99
FO-6	Component Location, Audio Circuit Card Assembly C-10905/URC-99
FO-7	Component Location, Interface Circuit Card Assembly
FO-8	Diagram, Wiring Interconnect, C-10905/URC-99
FO-9	Component Location, Audio Filter Circuit Card C-10905/URC-99
FO-10	Diagram Schematic, Switching Unit C-10904/URC-98
FO-11	Diagram Schematic, Cable Adapter
FO-12	Diagram Schematic, Cable Adapter Divider/Audio

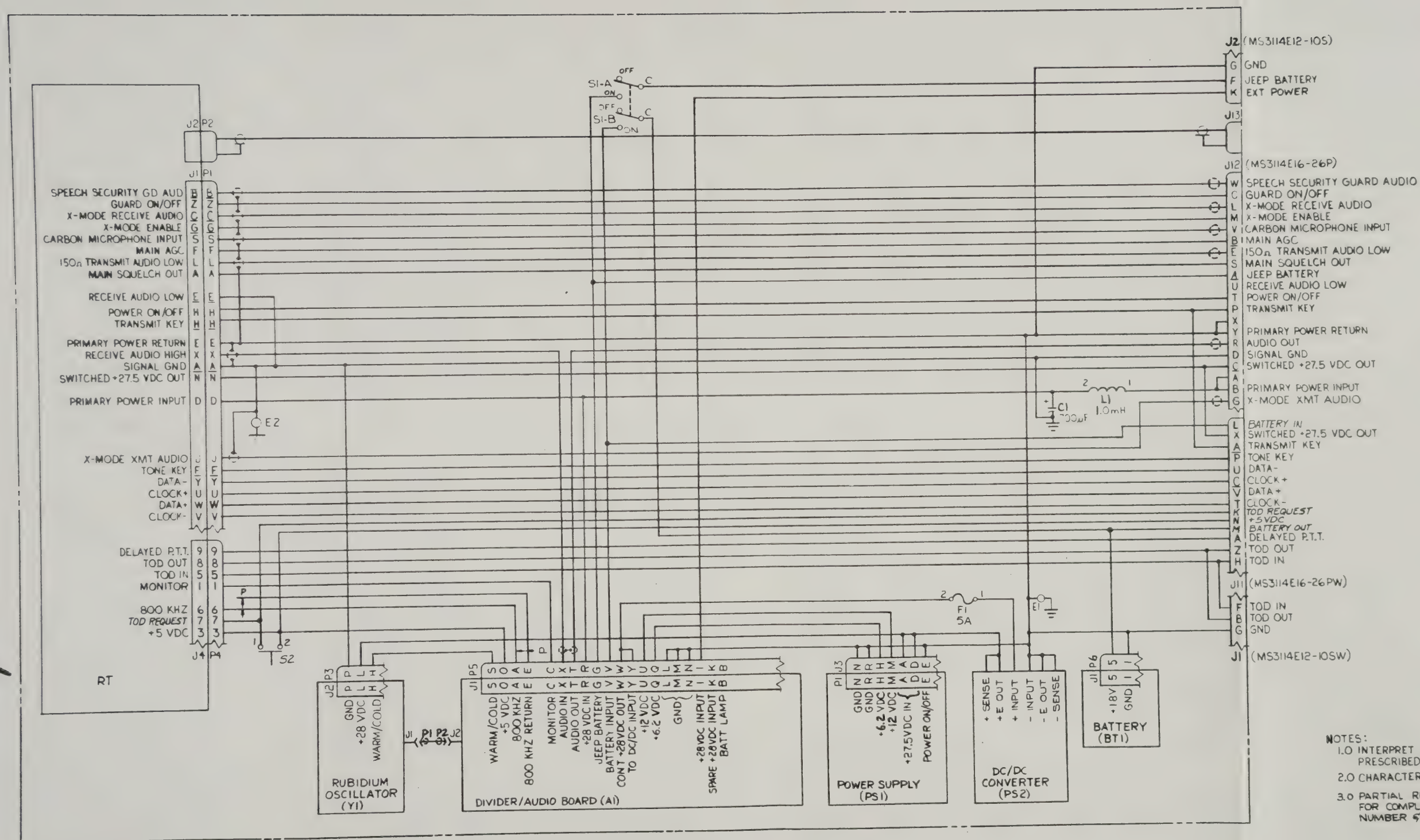


NOTES:

- 1.0 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-STD-100.
- 2.0 CHARACTERS UNDERLINED DENOTE LOWER CASE.
- 3.0 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER & SUBASSEMBLY DESIGNATION.

URC-103-010A
REF MX DWG 402976 REV C

Figure FO-1. Diagram Schematic,
MT-6165/URC



- NOTES:
- 1.0 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-STD-100.
 - 2.0 CHARACTERS UNDERLINED DENOTE LOWER CASE.
 - 3.0 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER & SUBASSEMBLY DESIGNATION.

URC-103-010A
REF MX DWG 482976 REV C

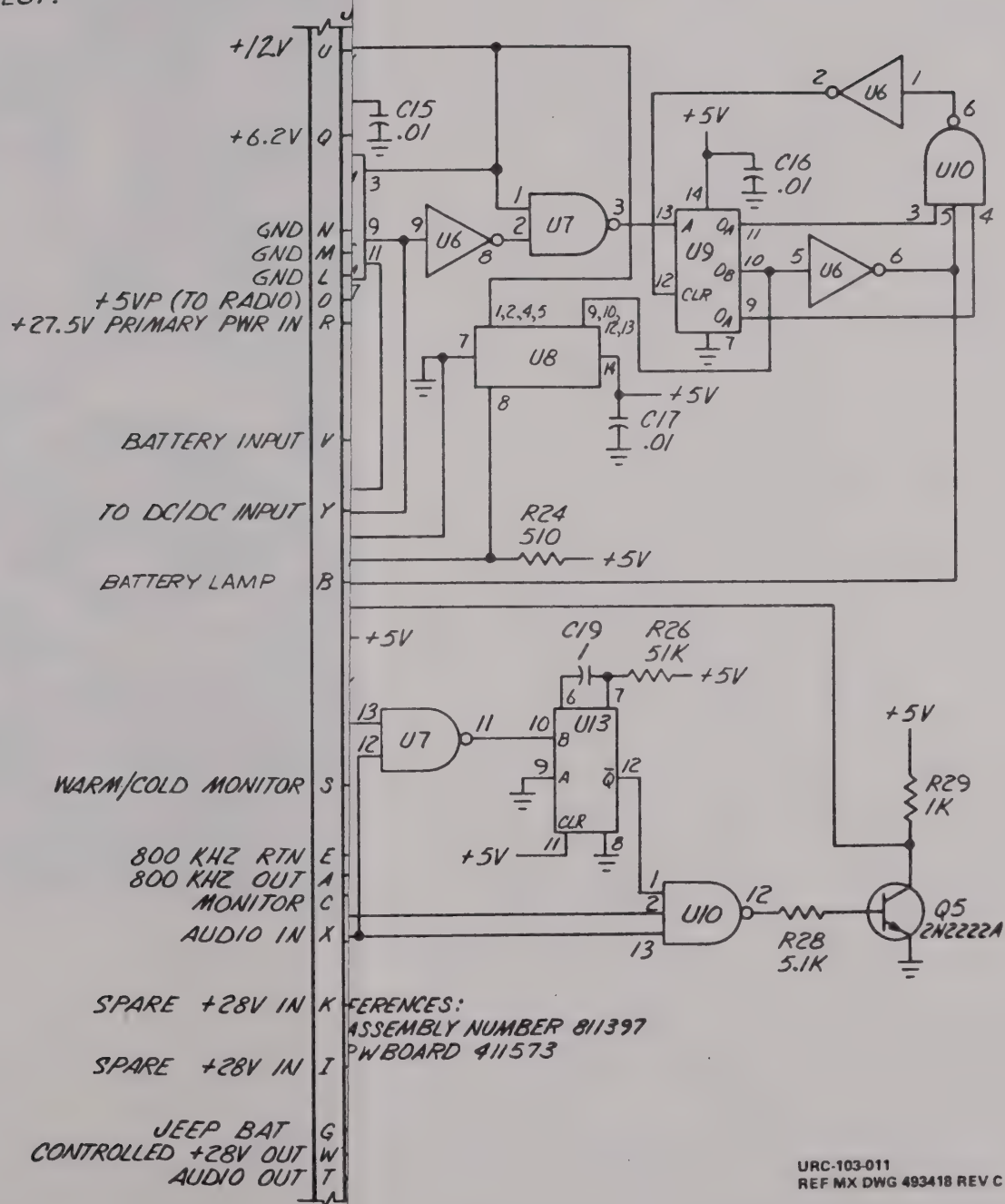
Figure FO-1. Diagram Schematic,
MT-6165/URC

NOTES

1.0 UNLESS OTHERWISE SPECIFIED:
 RESISTANCE VALUES ARE IN OHMS.
 CAPACITANCE VALUES ARE IN μ F.
 INDUCTANCE VALUES ARE IN μ H.
 RESISTORS ARE 5%, 1/8 W.
 DIODES AND TRANSISTORS ARE
 JANIX TYPE.
 VOLTAGES ARE DC.

2.0 SELECT @ TEST.

REF DESIGNATION	
HIGHEST USED	NOT USED
VR2	C2
CR14	
C20	
U13	
J2	
Q5	
K1	
R34	



URC-103-011
 REF MX DWG 493418 REV C

Figure FO-2. Diagram Schematic,
 Divider/Audio MT-6165/URC

FO-3/(FO-4 blank)

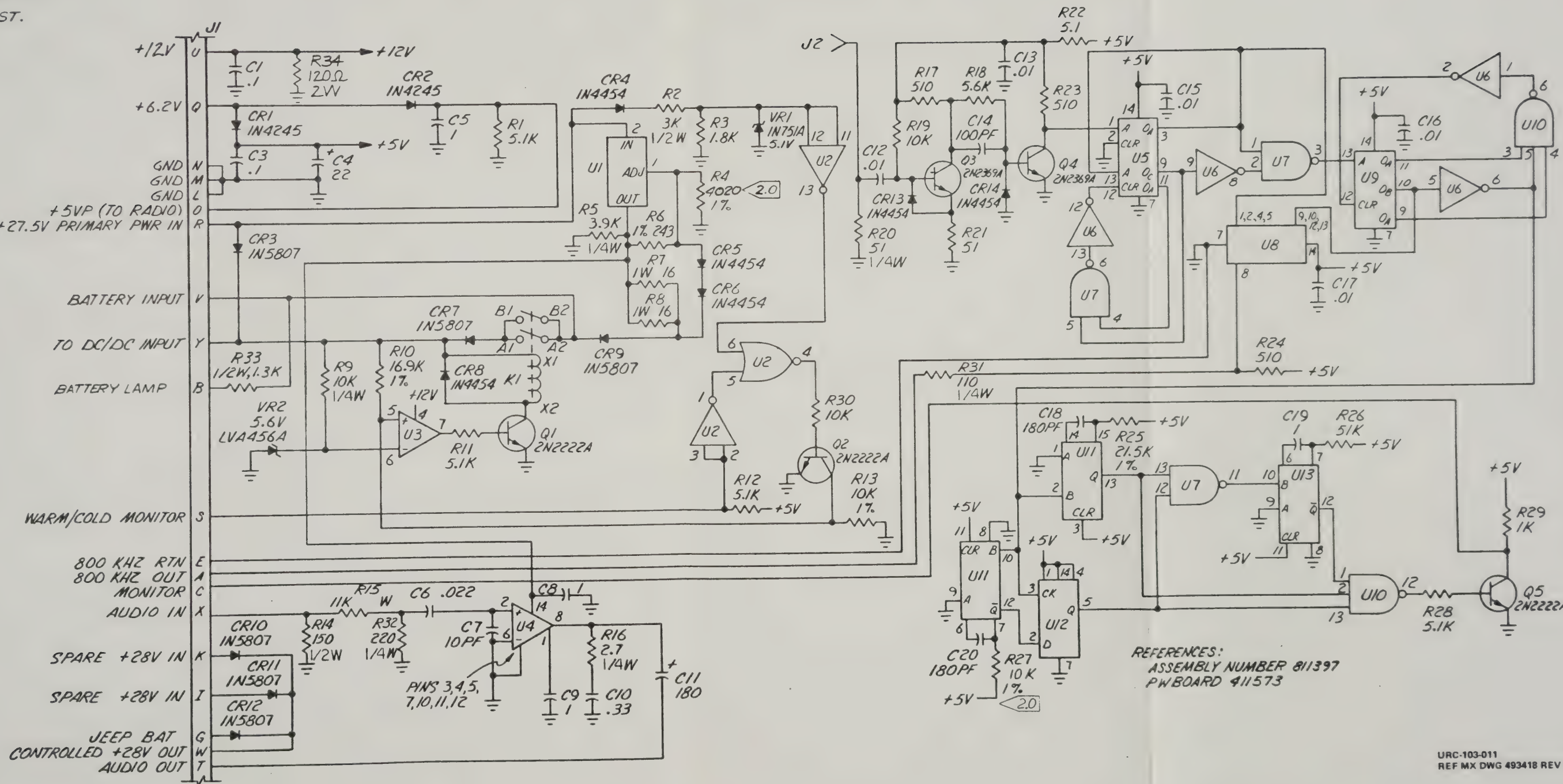
NOTES

1.0 UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
CAPACITANCE VALUES ARE IN μ F.
INDUCTANCE VALUES ARE IN μ H.
RESISTORS ARE 5%, 1/8 W.
DIODES AND TRANSISTORS ARE
JANTX TYPE.
VOLTAGES ARE DC.

3.0 PARTIAL REFERENCE DESIGNATIONS ARE
SHOWN. FOR COMPLETE DESIGNATION
PREFIX WITH UNIT NUMBER AND
SUBASSEMBLY DESIGNATION.

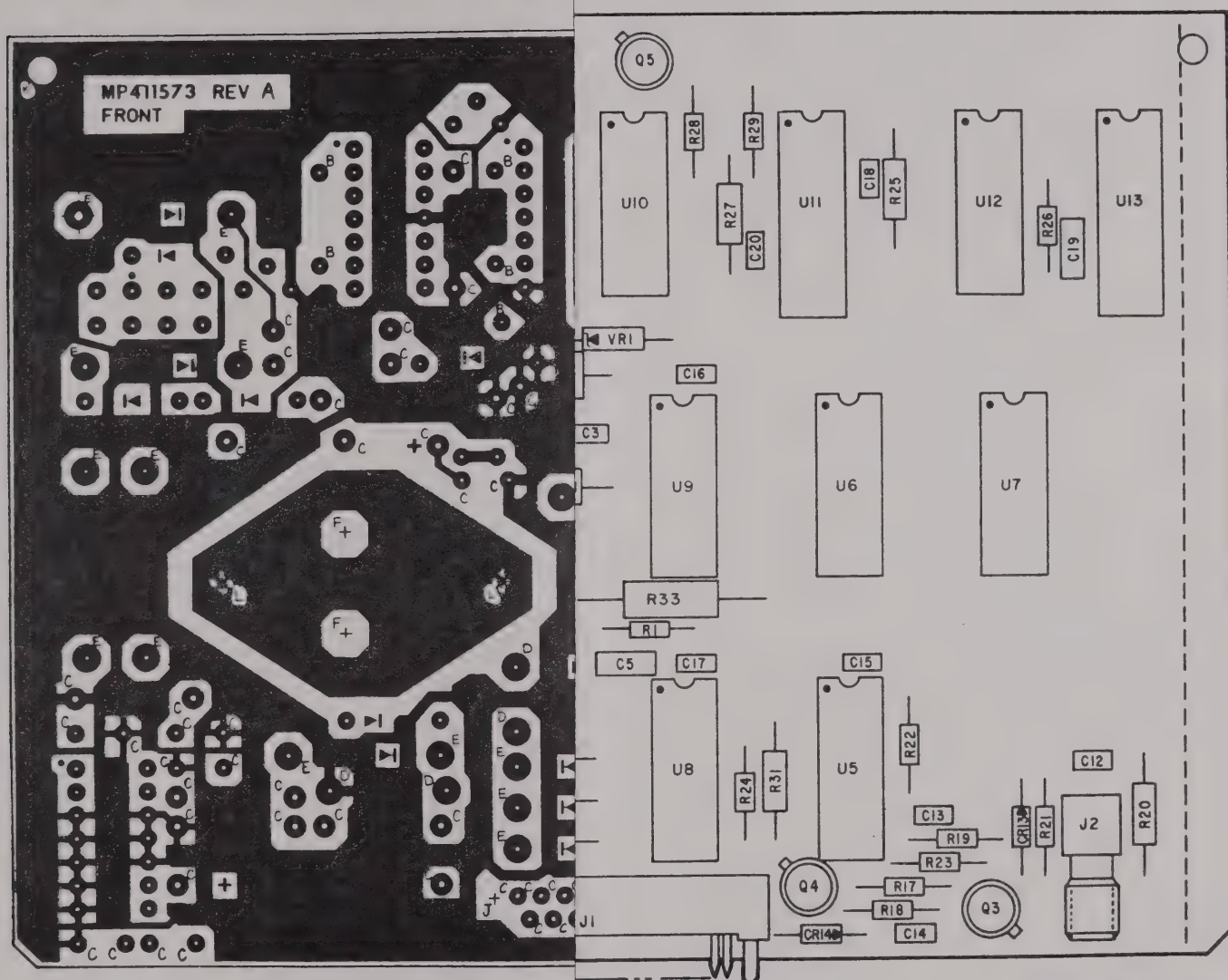
2.0 SELECT @ TEST.

REF DESIGNATION	
HIGHEST USED	NOT USED
VR2	C2
CR14	
C20	
U13	
J2	
Q5	
K1	
R34	



URC-103-011
REF MX DWG 493418 REV C

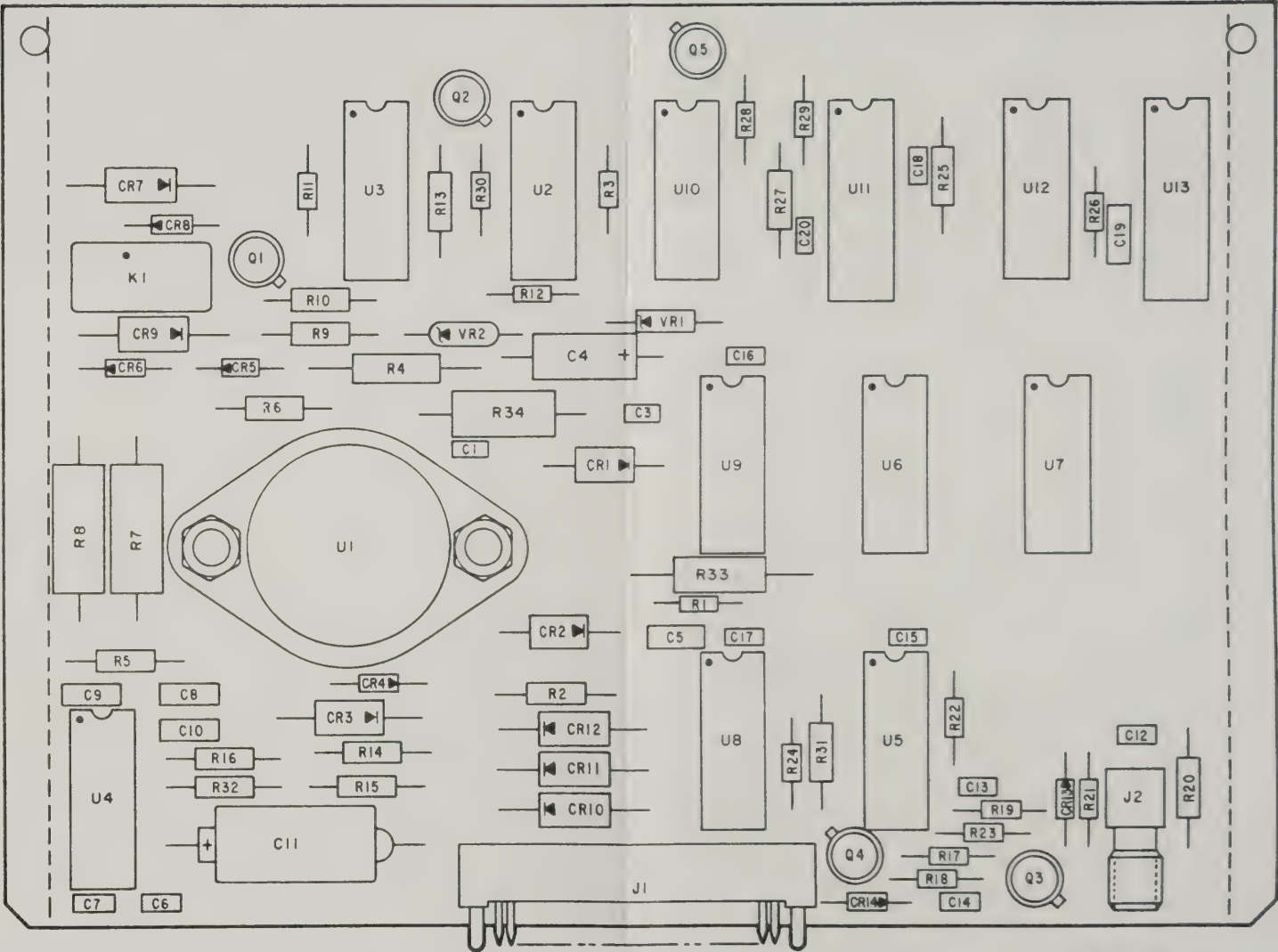
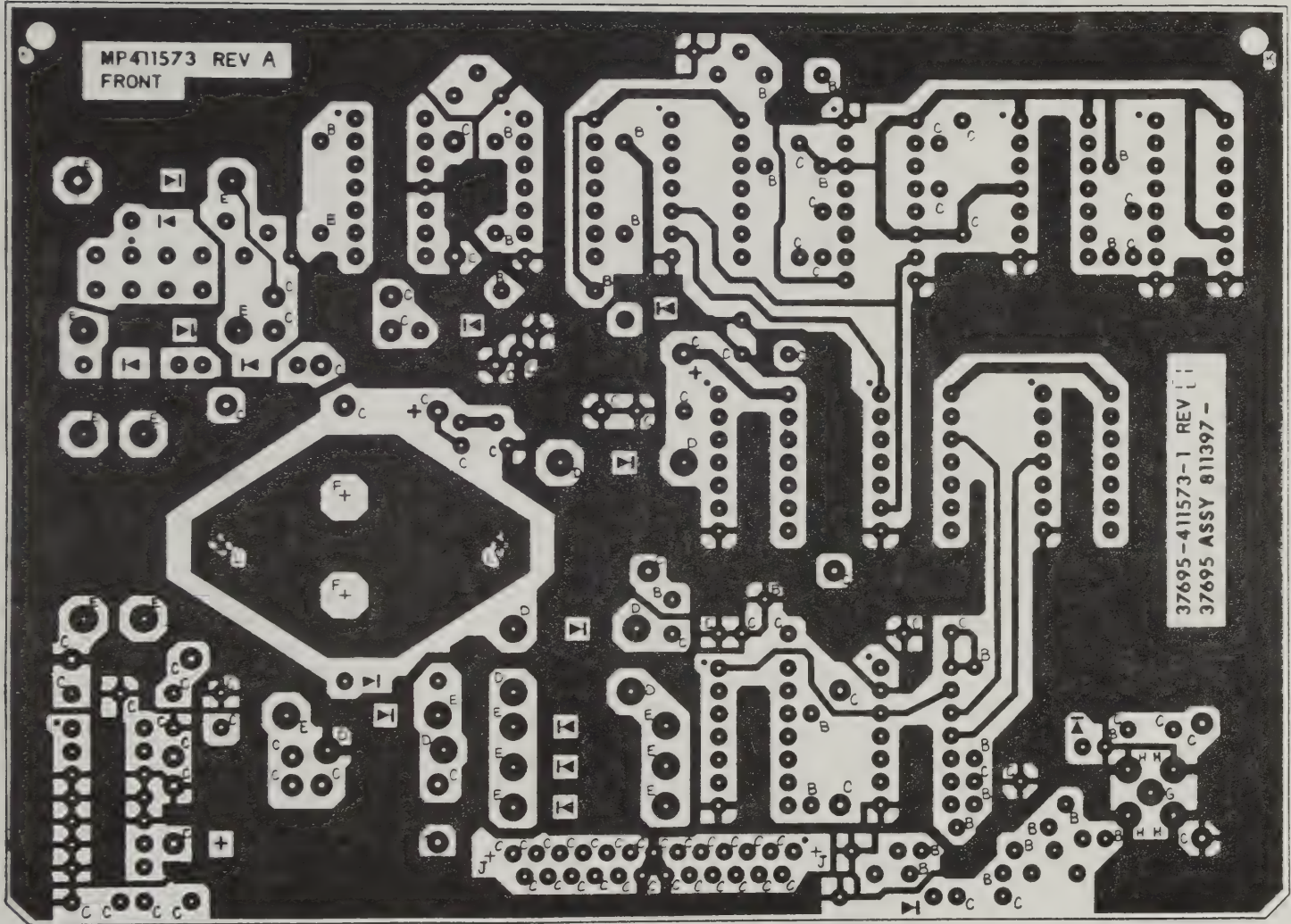
Figure FO-2. Diagram Schematic,
Divider/Audio MT-6165/URC



URC-103-012
REF MX DWG 411573 REV C
REF MX DWG 811397 REV C

**Figure FO-3. Component Location
Diagram, Divider/Audio
MT-6165/URC**

FO-5/(FO-6 blank)



URC-103-012
REF MX DWG 411573 REV C
REF MX DWG 811397 REV C

Figure FO-3. Component Location
Diagram, Divider/Audio
MT-6165/URC

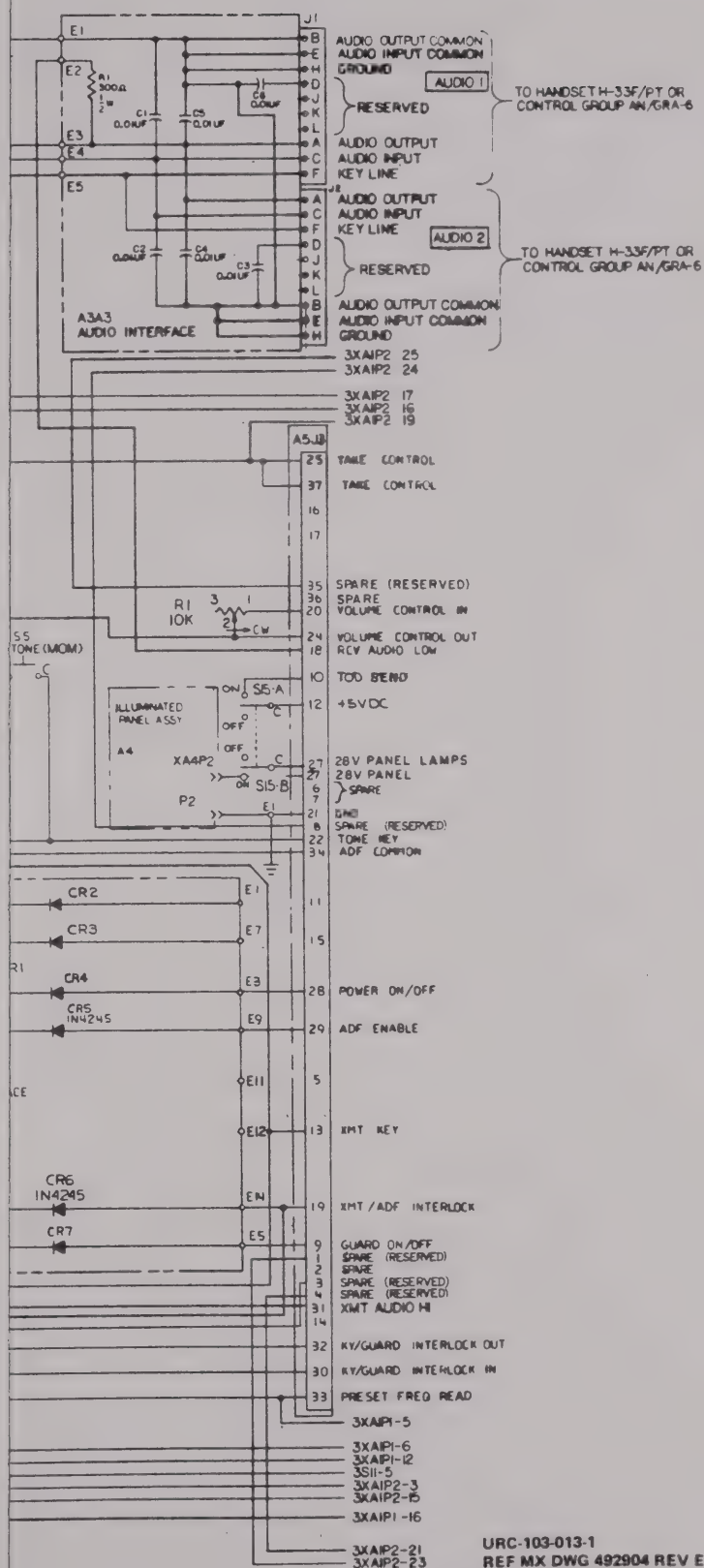
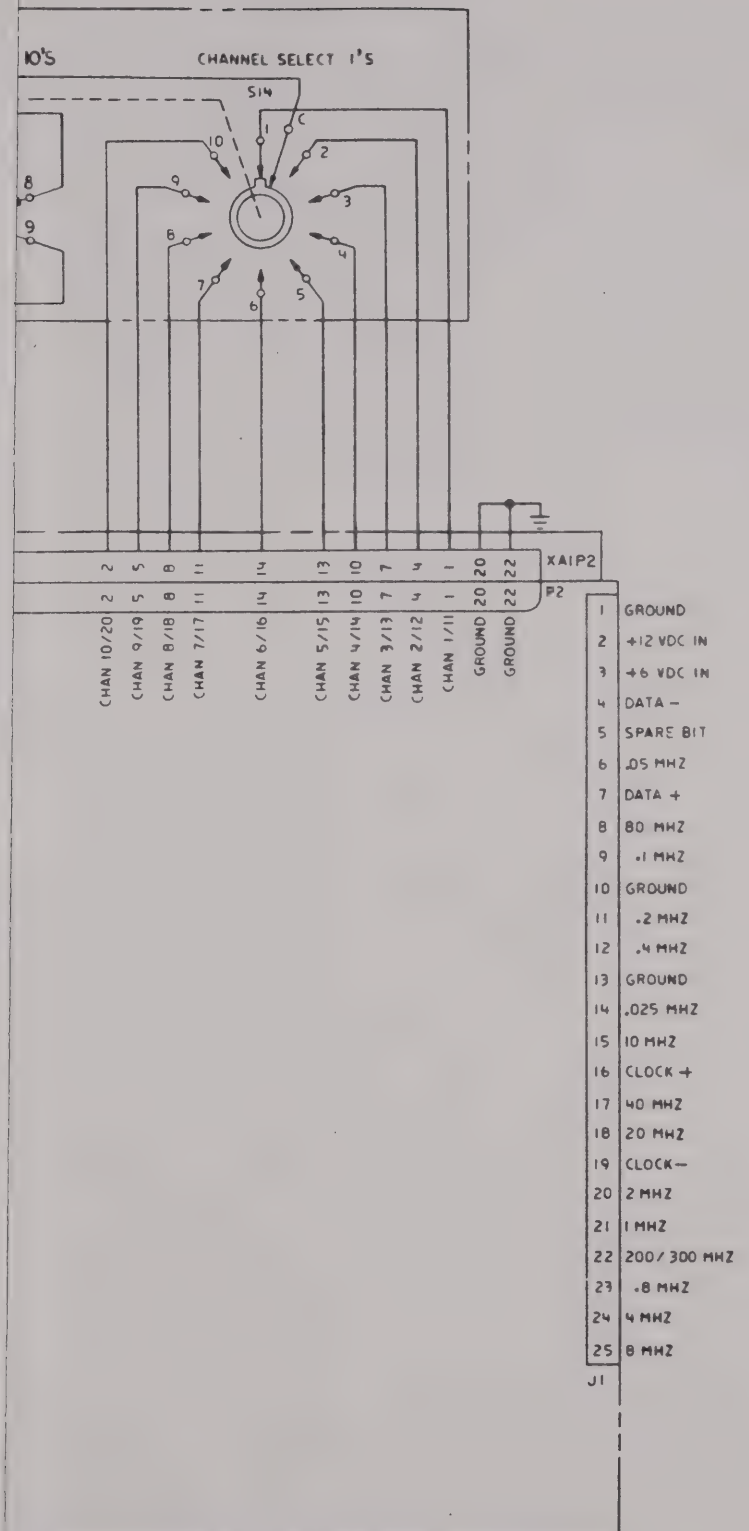


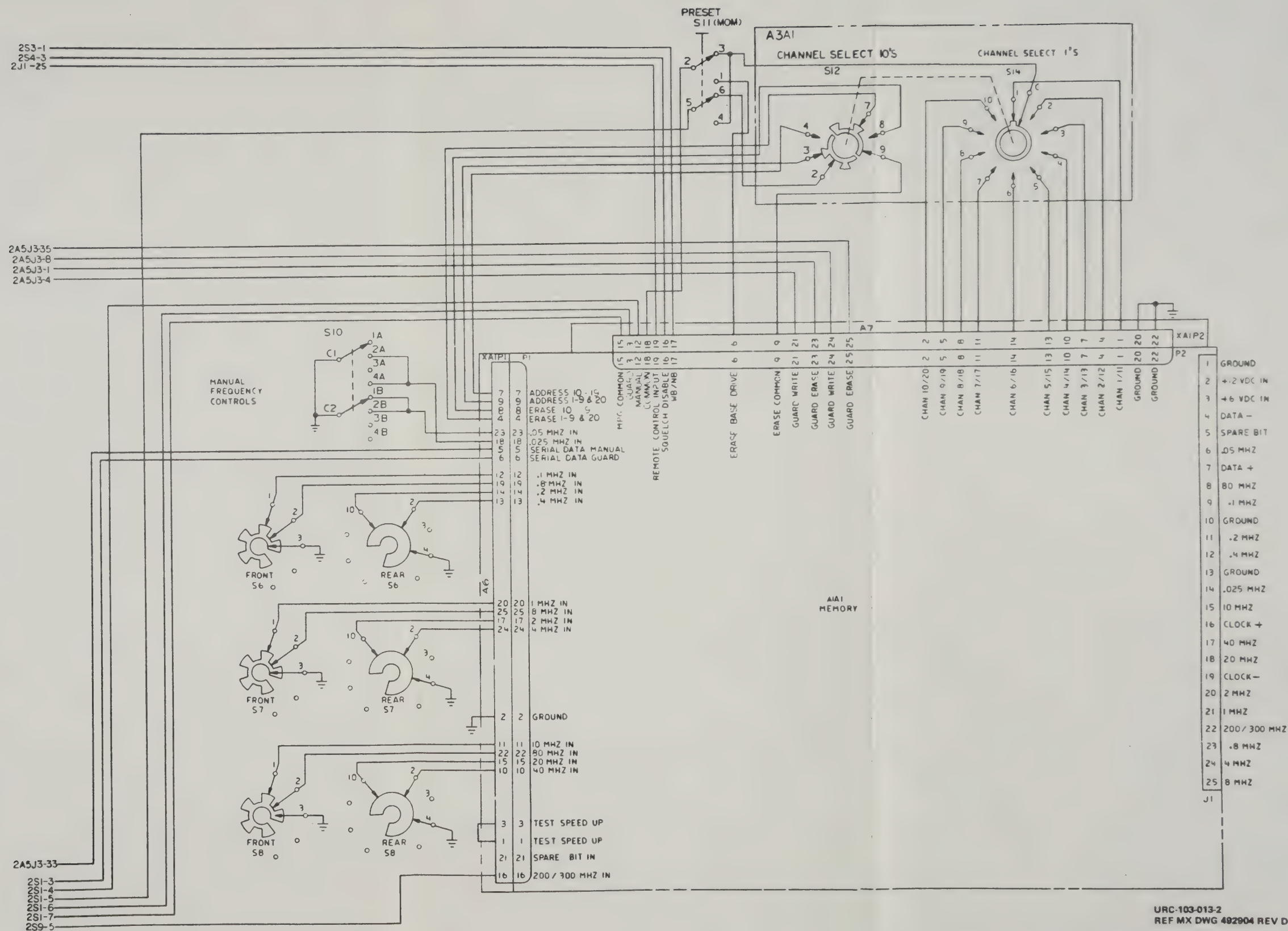
Figure FO-4. Diagram Schematic,
Switching Audio Plate C-10905/
URC-99 (Sheet 1 of 2)



URC-103-013-2
REF MX DWG 482904 REV D

Figure FO-4. Diagram Schematic,
Switching Audio Plate C-10905/
URC-99 (Sheet 2 of 2)

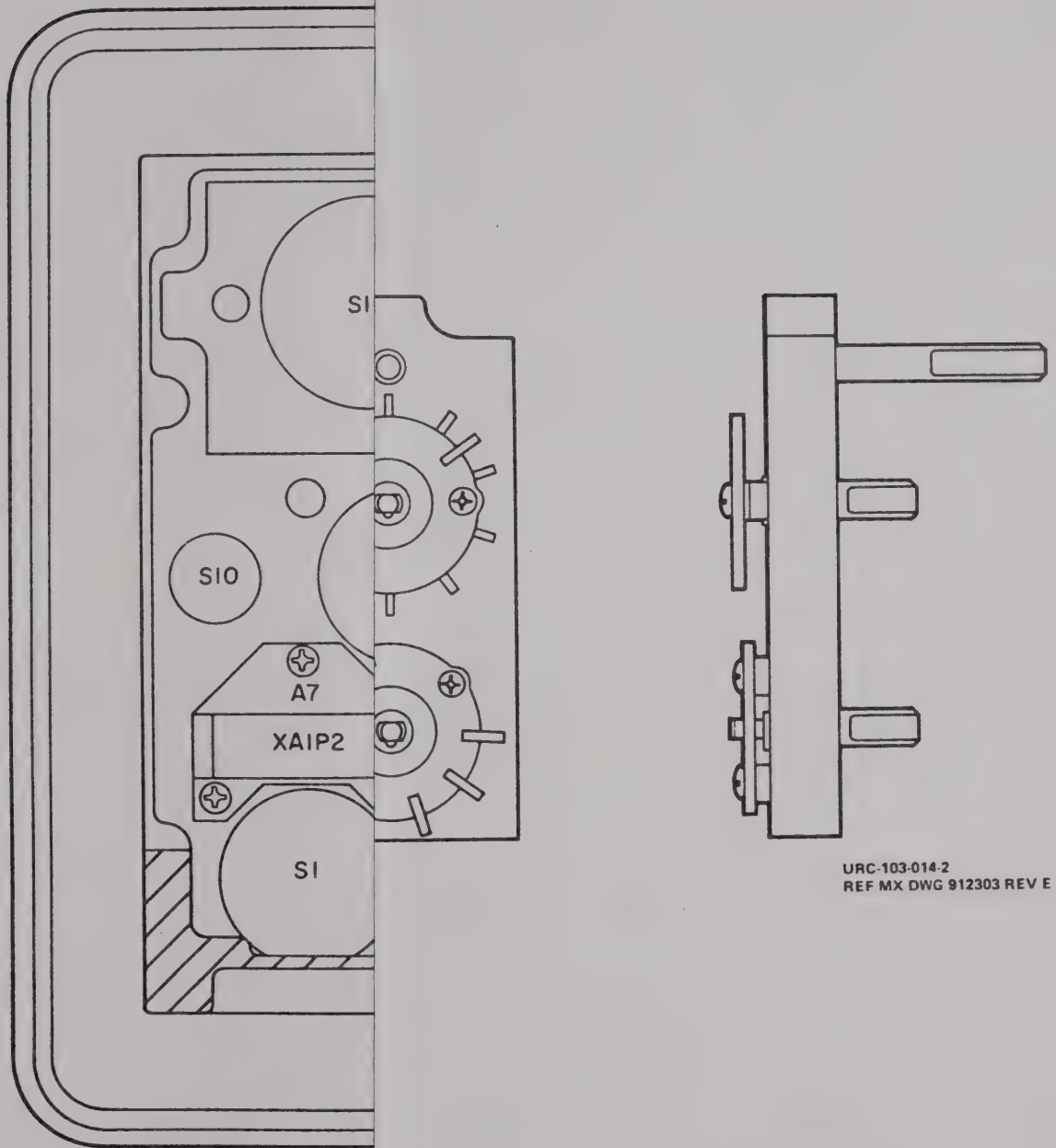
FO-9/(FO-10 blank)



URC-103-013-2
REF MX DWG 492904 REV D

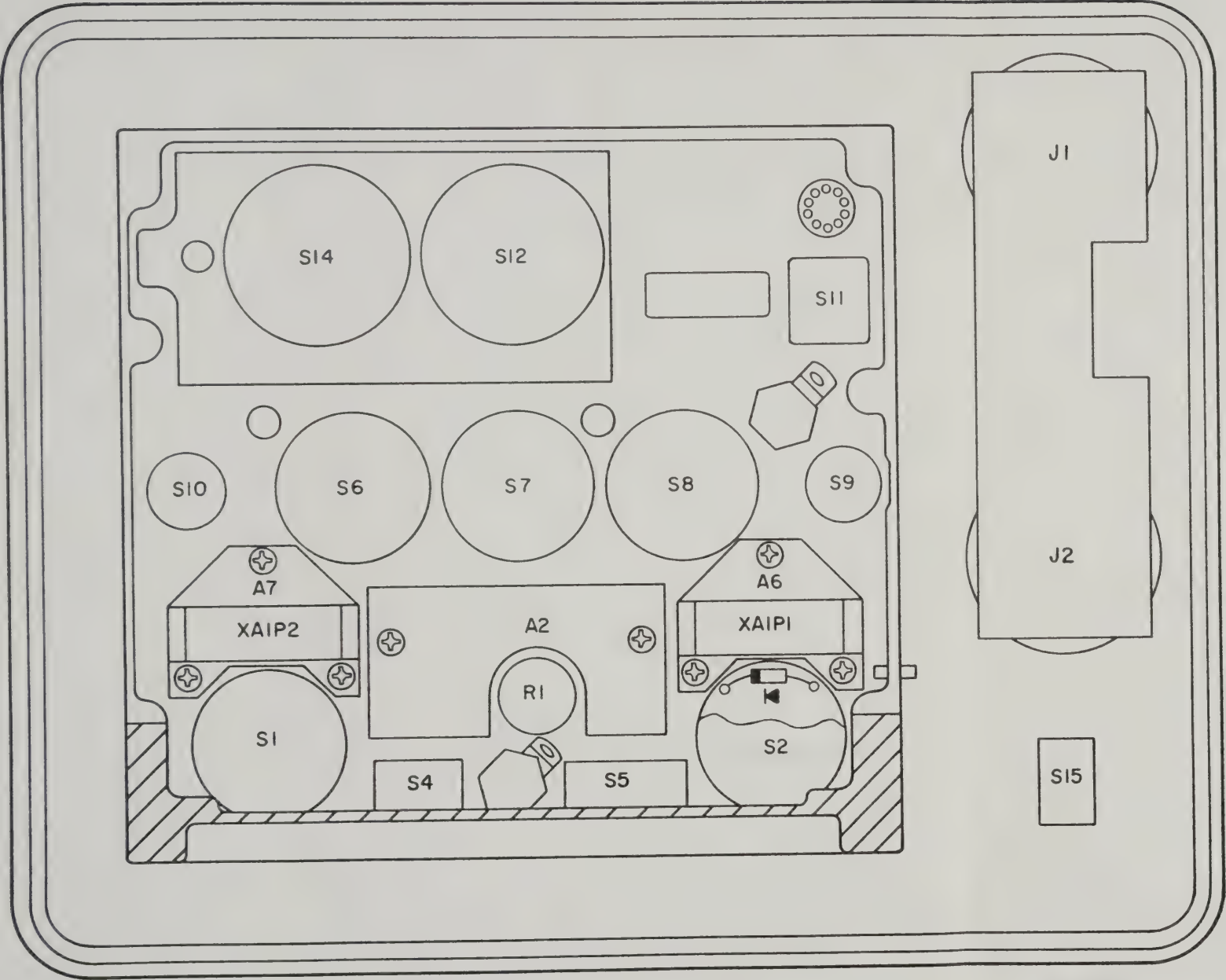
Figure FO-4. Diagram Schematic,
Switching Audio Plate C-10905/
URC-99 (Sheet 2 of 2)

FO-9/(FO-10 blank)

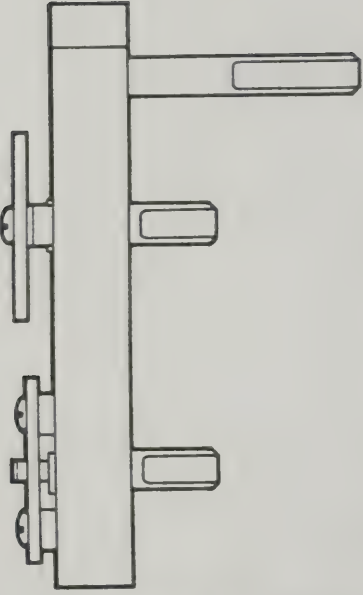
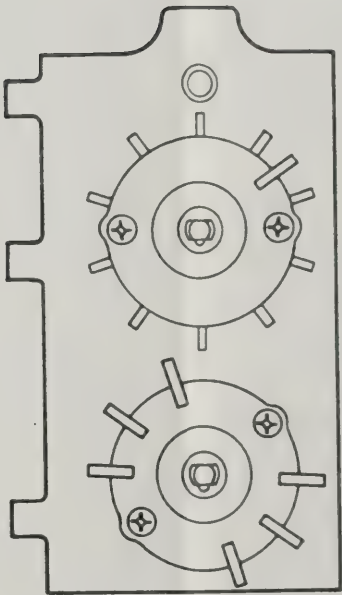


URC-103-014-2
REF MX DWG 912303 REV E

Figure FO-5. Component Location Diagram
Panel Assembly Switching Unit
C-10905/URC-99

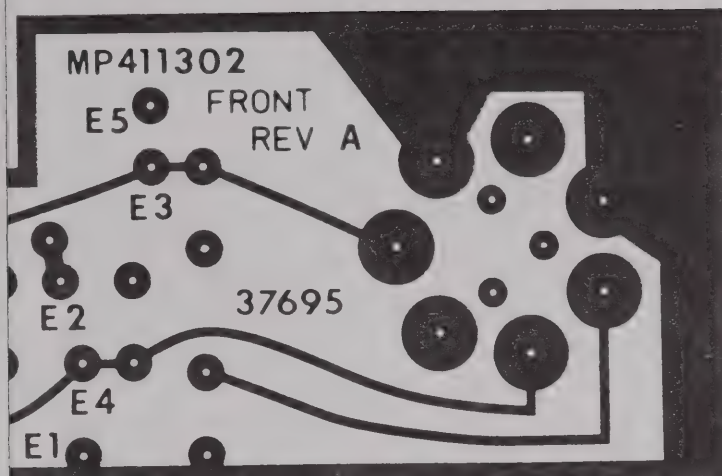


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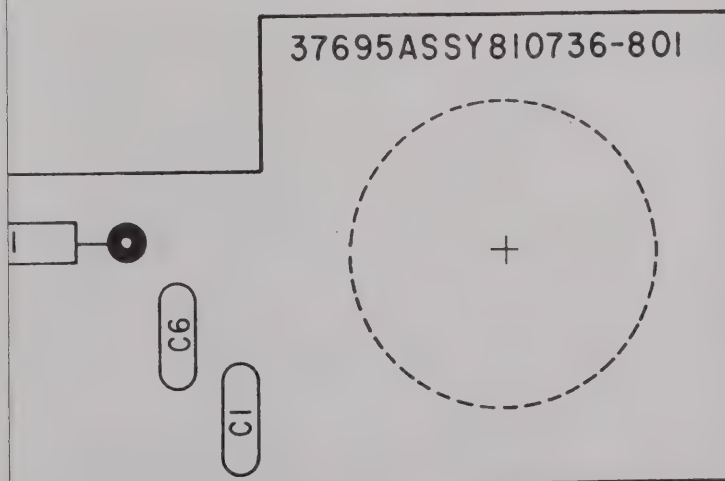


URC-103-014-2
REF MX DWG 912303 REV E

Figure FO-5. Component Location Diagram
Panel Assembly Switching Unit
C-10905/URC-99

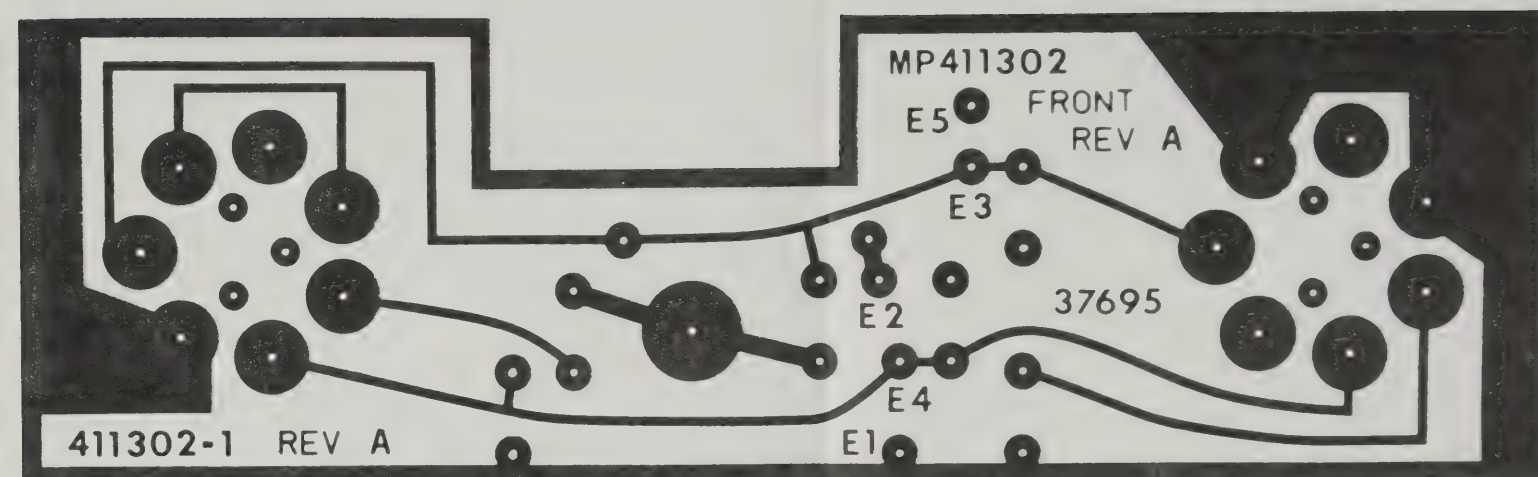


URC-103-015-1
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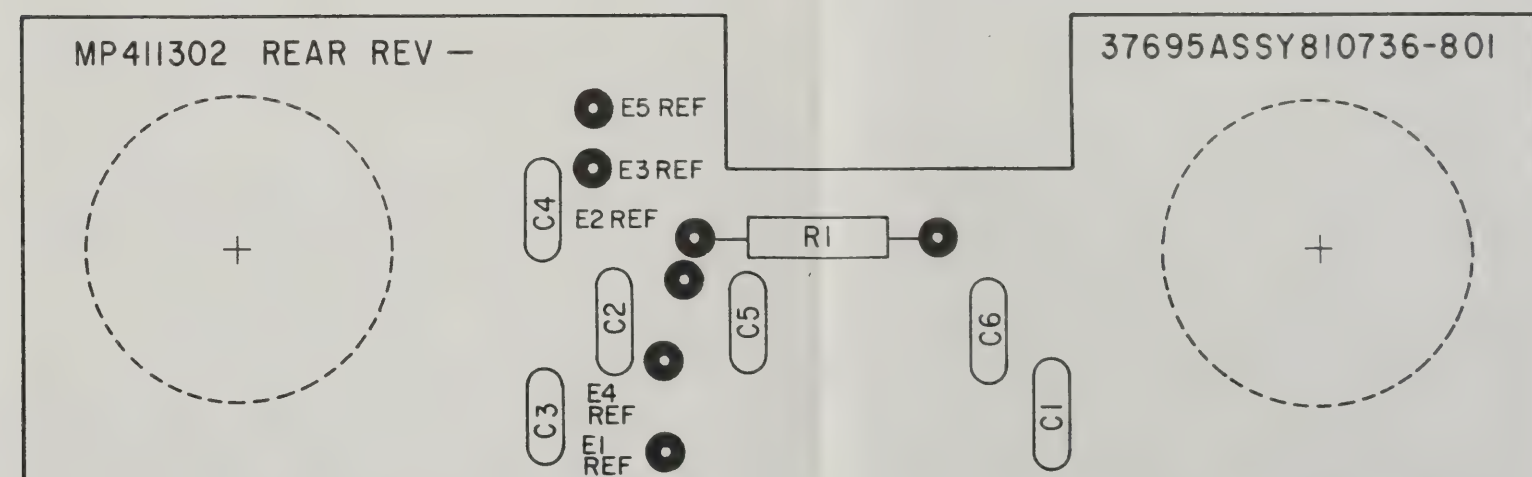


URC-103-015-2
REF MX DWG 810736 REV C

Figure FO-6. Component Location,
Audio Circuit Card Assembly
C-10905/URC-99

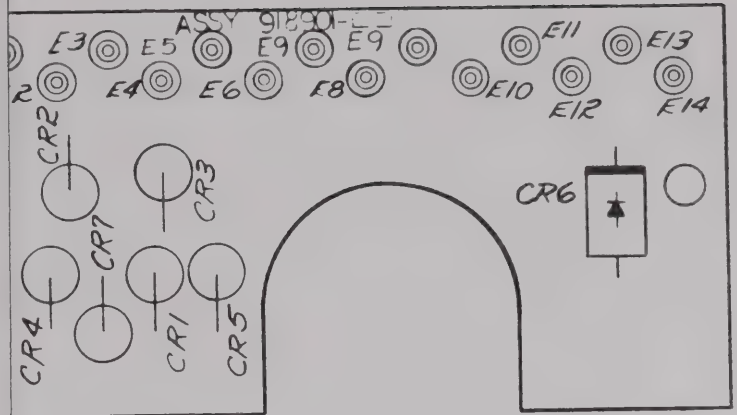


URC-103-015-1
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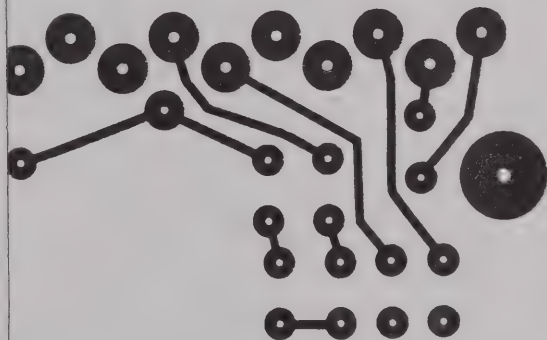


URC-103-015-2
REF MX DWG 810736 REV C

Figure FO-6. Component Location,
Audio Circuit Card Assembly
C-10905/URC-99



URC-103-016-2
REF MX DWG 918901 REV H

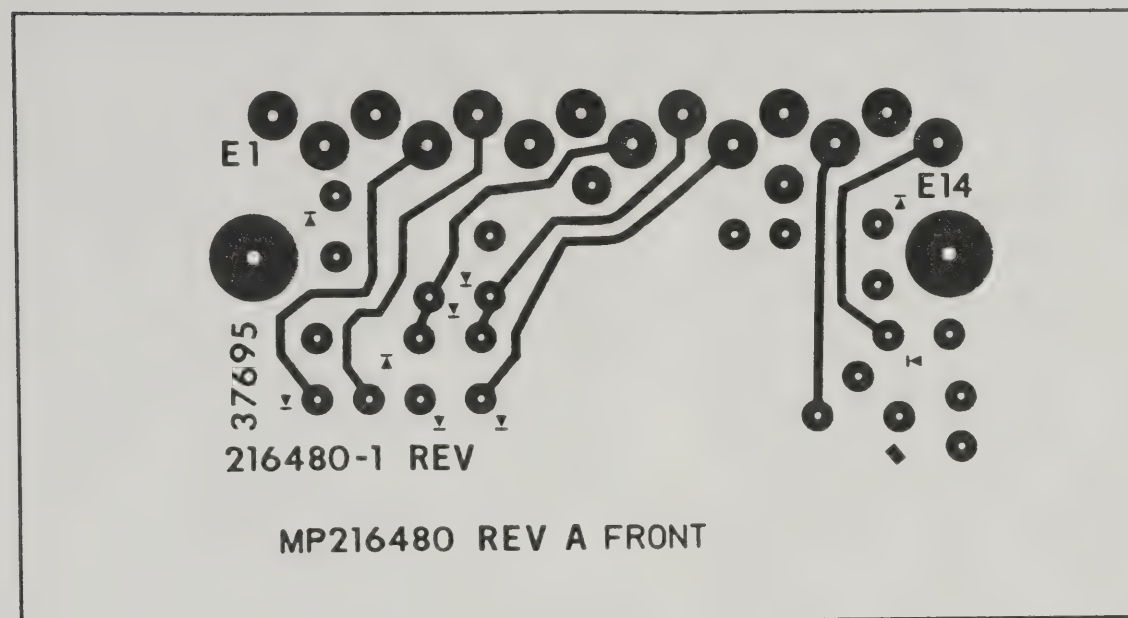


REV A REAR

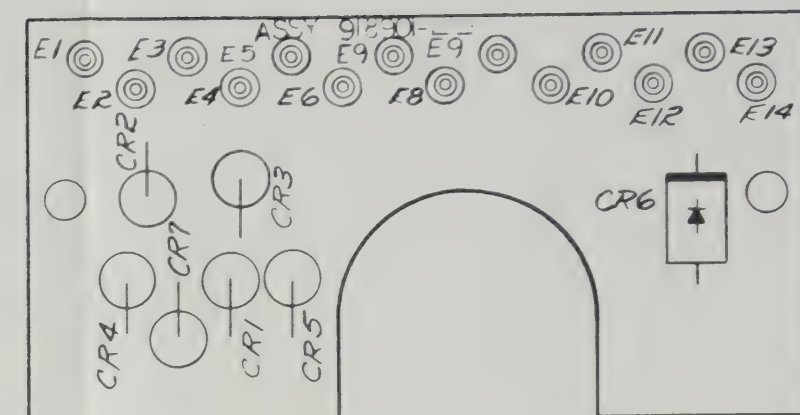
URC-103-016-3
REF MX DWG 218480 REV A

Figure FO-7. Component Location
Interface Circuit Card Assembly

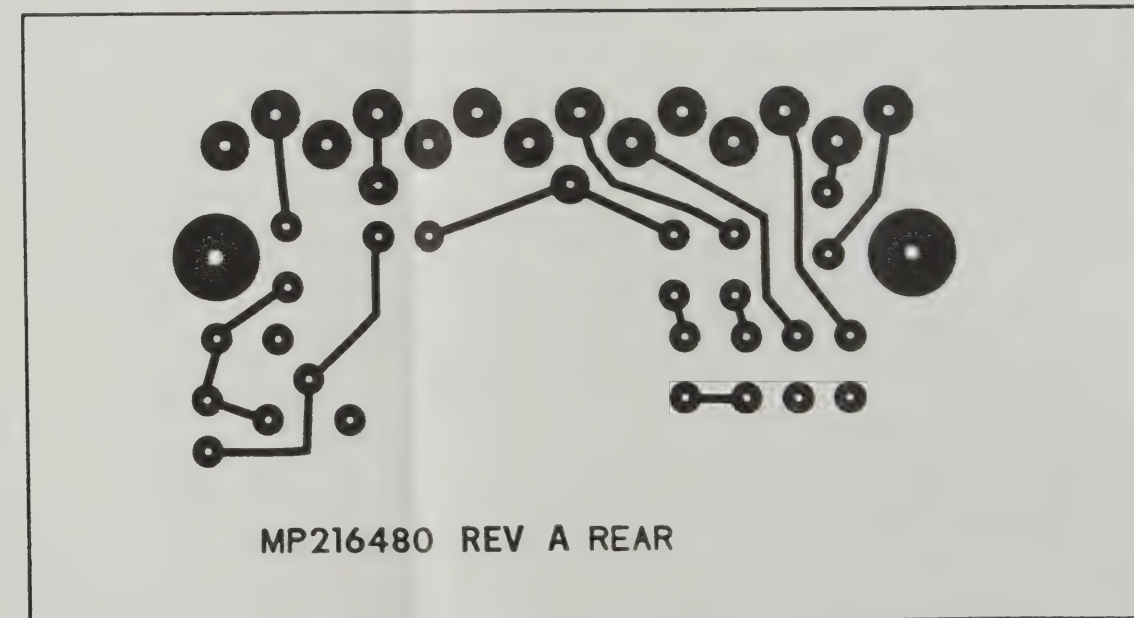
FO-15/(FO-16 blank)



URC-103-016-1
REF MX DWG 216480 REV A



URC-103-016-2
REF MX DWG 918901 REV H



URC-103-016-3
REF MX DWG 216480 REV A

Figure F0-7. Component Location
Interface Circuit Card Assembly

PARTIAL REFERENCE DESIGNATIONS ARE
OWN. FOR COMPLETE DESIGNATION
PREFIX WITH UNIT NUMBER & SUBASSEMBLY
DESIGNATION.

3

MS3114E12-105W)

J1 (MS3114 E 20-41PW)

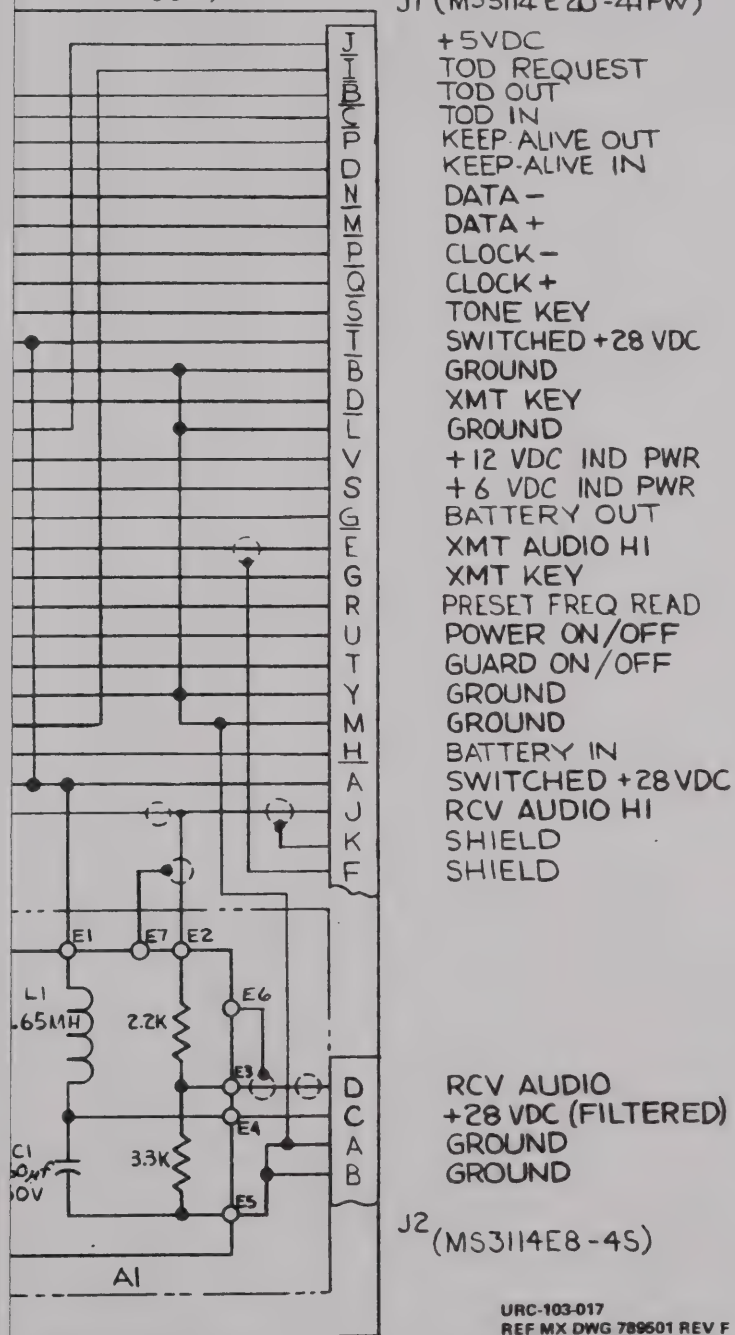


Figure FO-8. Diagram Wiring Interconnect
C-10905/URC-99

FO-17/(FO-18 blank)

NOTES:

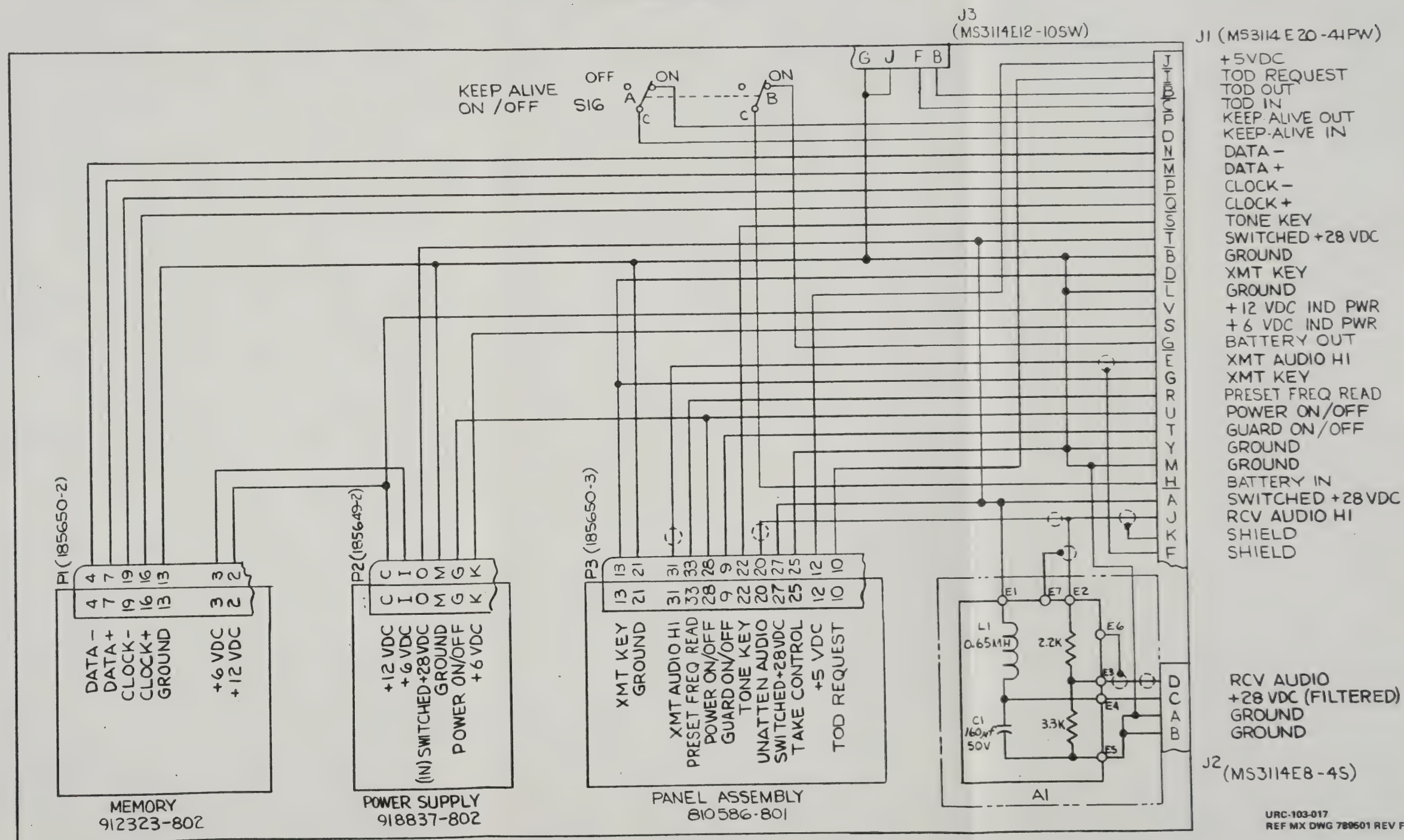
1.0 GENERAL

1.1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY MIL-STD-100.

1.2 UNLESS OTHERWISE SPECIFIED, DIMENSIONS, TOLERANCES, AND SURFACE FINISH APPLY AFTER PLATING OR CHEMICAL FILM TREATMENTS, AND PRIOR TO ORGANIC COATINGS.

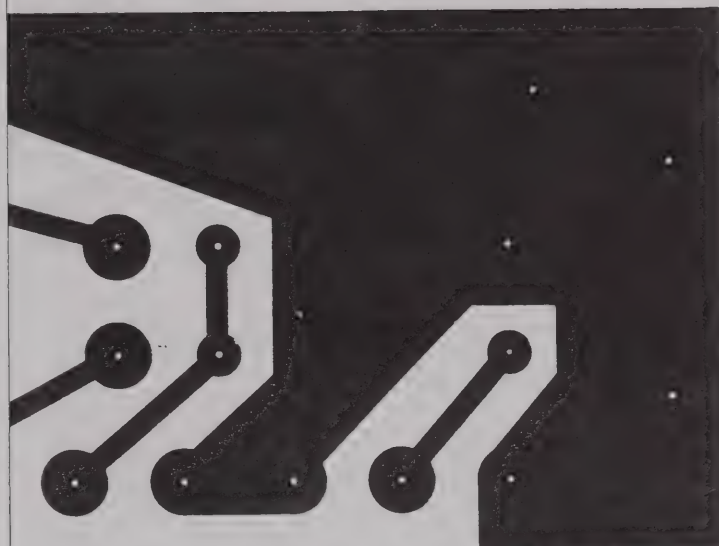
1.3 DO NOT SCALE DRAWING.

2.0 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER & SUBASSEMBLY DESIGNATION.

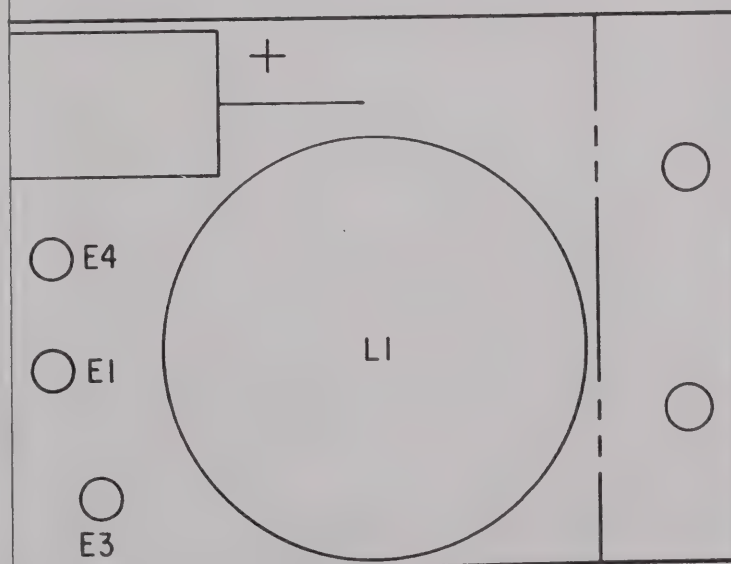


URC-103-017
REF MX DWG 789601 REV F

Figure FO-8. Diagram Wiring Interconnect
C-10905/URC-99



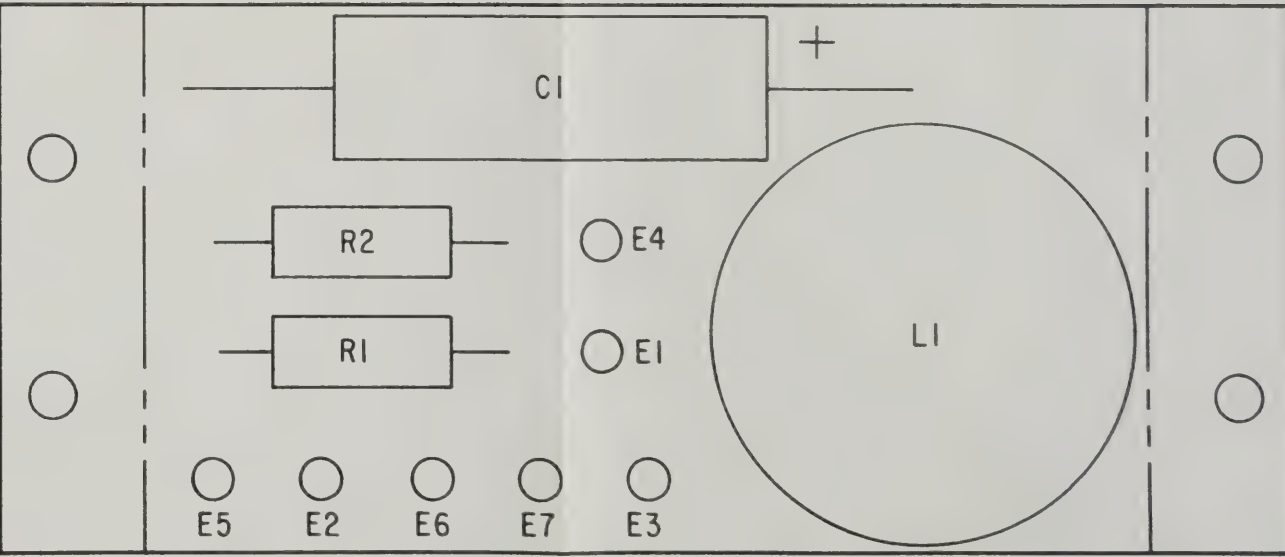
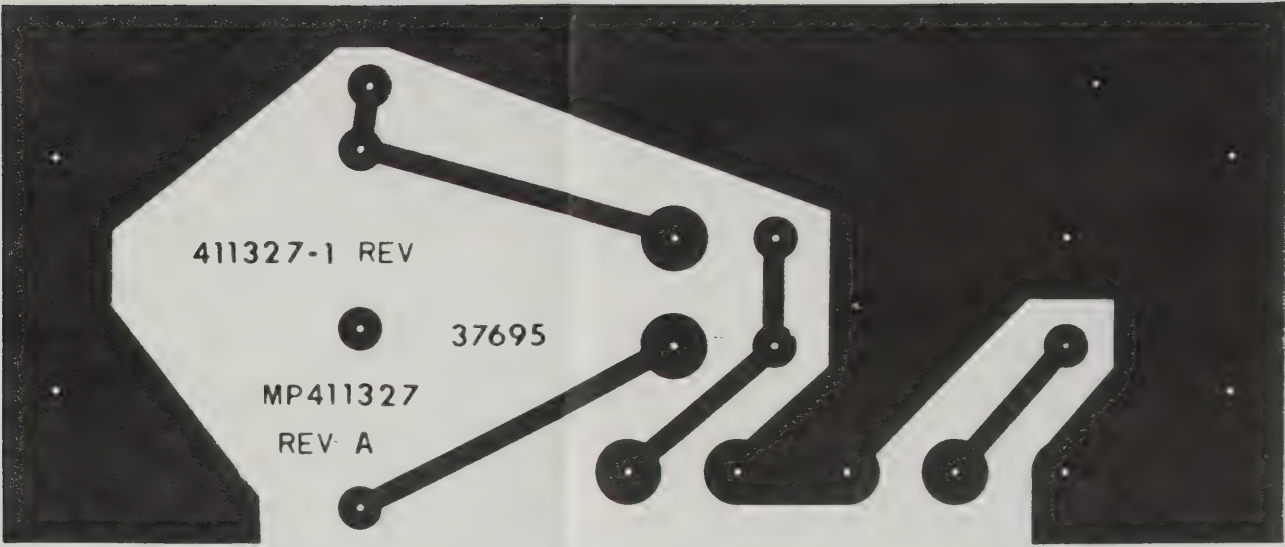
URC-103-018-1
REF MX DWG 411327 REV A



URC-103-018-2
REF MX DWG 810621 REV D

Figure FO-9. Component Location,
Audio Filter Circuit Card
C-10905/URC-99

FO-19/(FO-20 blank)



URC-103-018-2
REF MX DWG 810621 REV D

Figure FO-9. Component Location,
Audio Filter Circuit Card
C-10905/URC-99

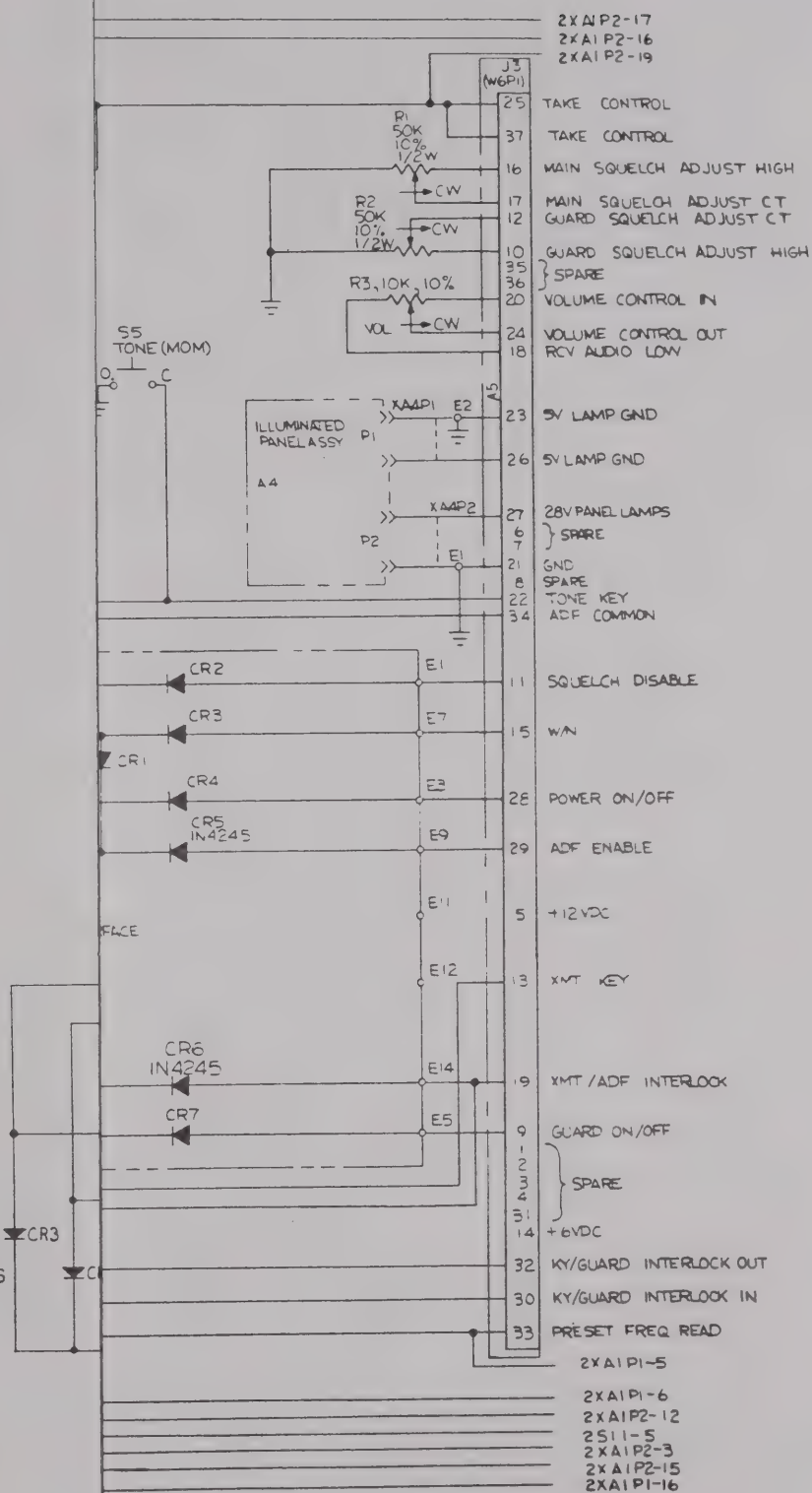
X X-X
PIN NO
PARTIAL REF DES
SHEET NO. OF ORIGIN OR DESTINATION
CIRCUIT CONTINUATION CODE

REF. DESIGNATION	
HIGHEST USED	NOT USED
E2 A7 XA4P2	
R3 VR1	
CR3 SIO	
A	
J1 P2	
A2	
CR9	
E14	
21 R3	

CROSS REFERENCE TABLE		
REF DES	PART NO.	PWB
A	912323-001	---
A2	918901-001	216480-1

HIGHEST USED	NOT USED
A3	
S14	SF-S1, S13
A4	
P2	
A5	
J3	J1 J2
A6	
XA1P1	
A7	
XA1P2	XAP

IN4454-1
4 PLACES



URC-103-019-1
REF MX DWG 492643 REV B

Figure FO-10. Diagram Schematic, Switching Unit C-10904/URC-98 (Sheet 1 of 2)

FO-21/(FO-22 blank)

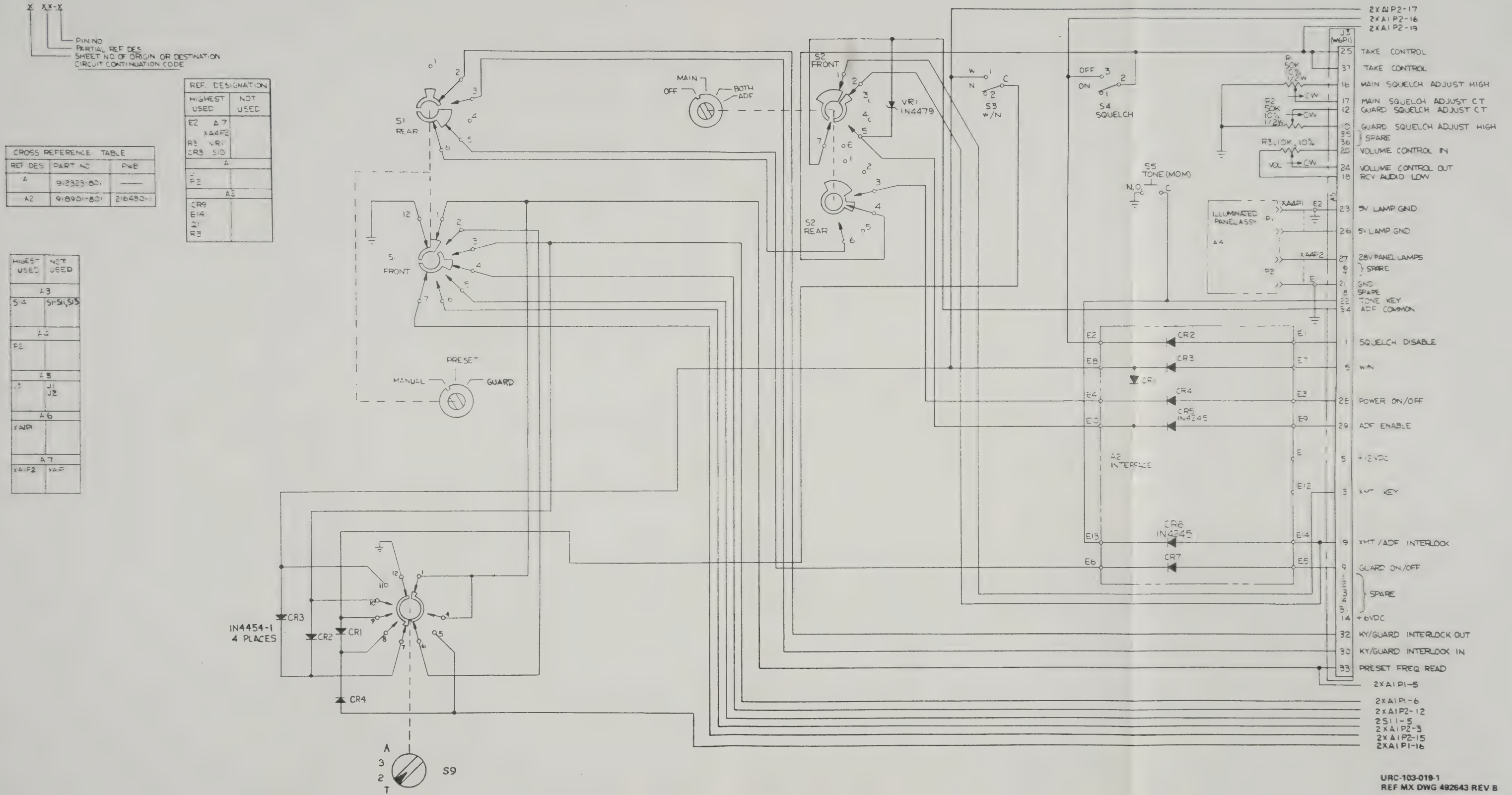
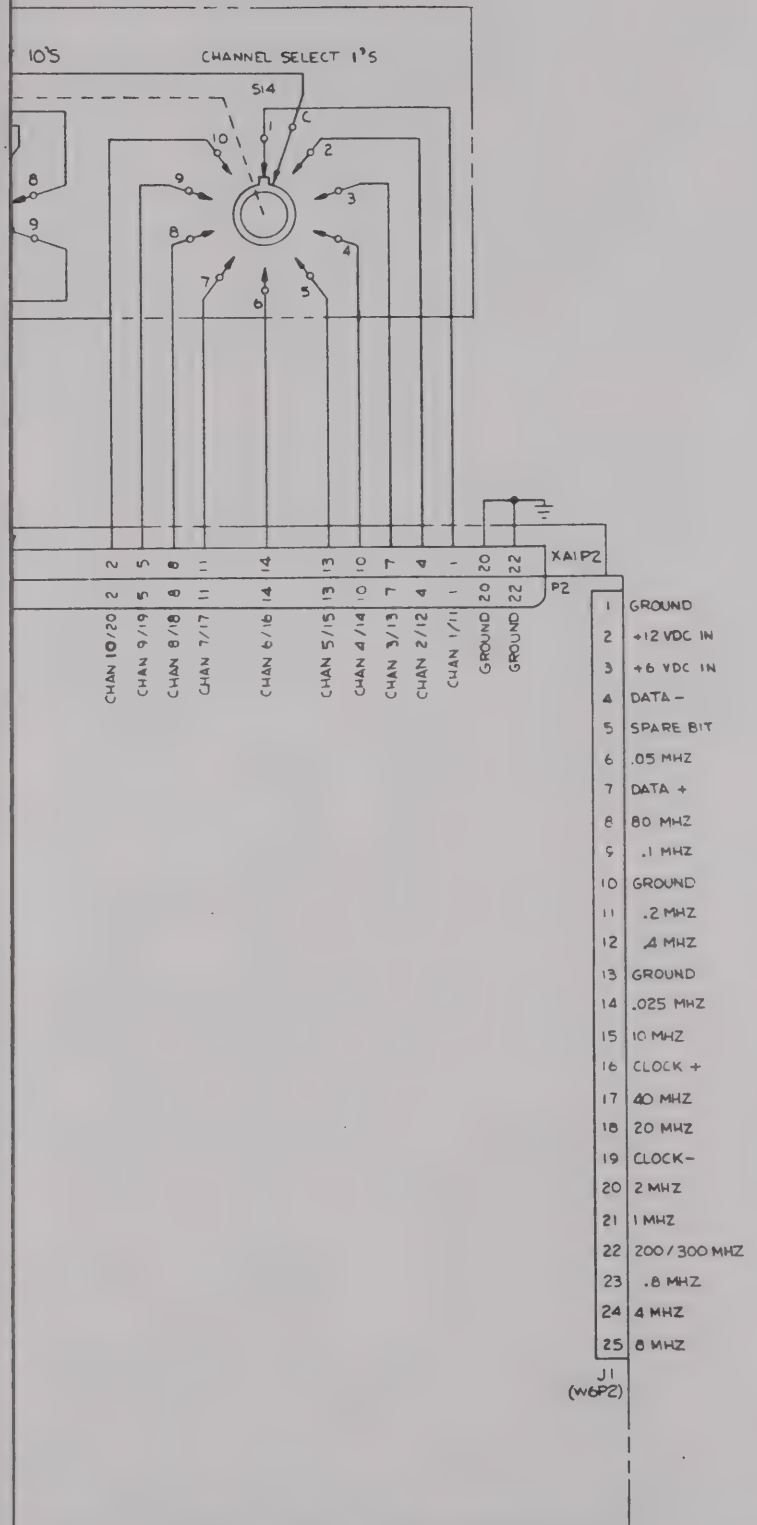


Figure FO-10. Diagram Schematic, Switching Unit C-10904/URC-98 (Sheet 1 of 2)



URC-103-019-2
REF MX DWG 492643 REV -

Figure FO-10. Diagram Schematic, Switching Unit C-10904/URC-98 (Sheet 2 of 2)

FO-23/(FO-24 blank)

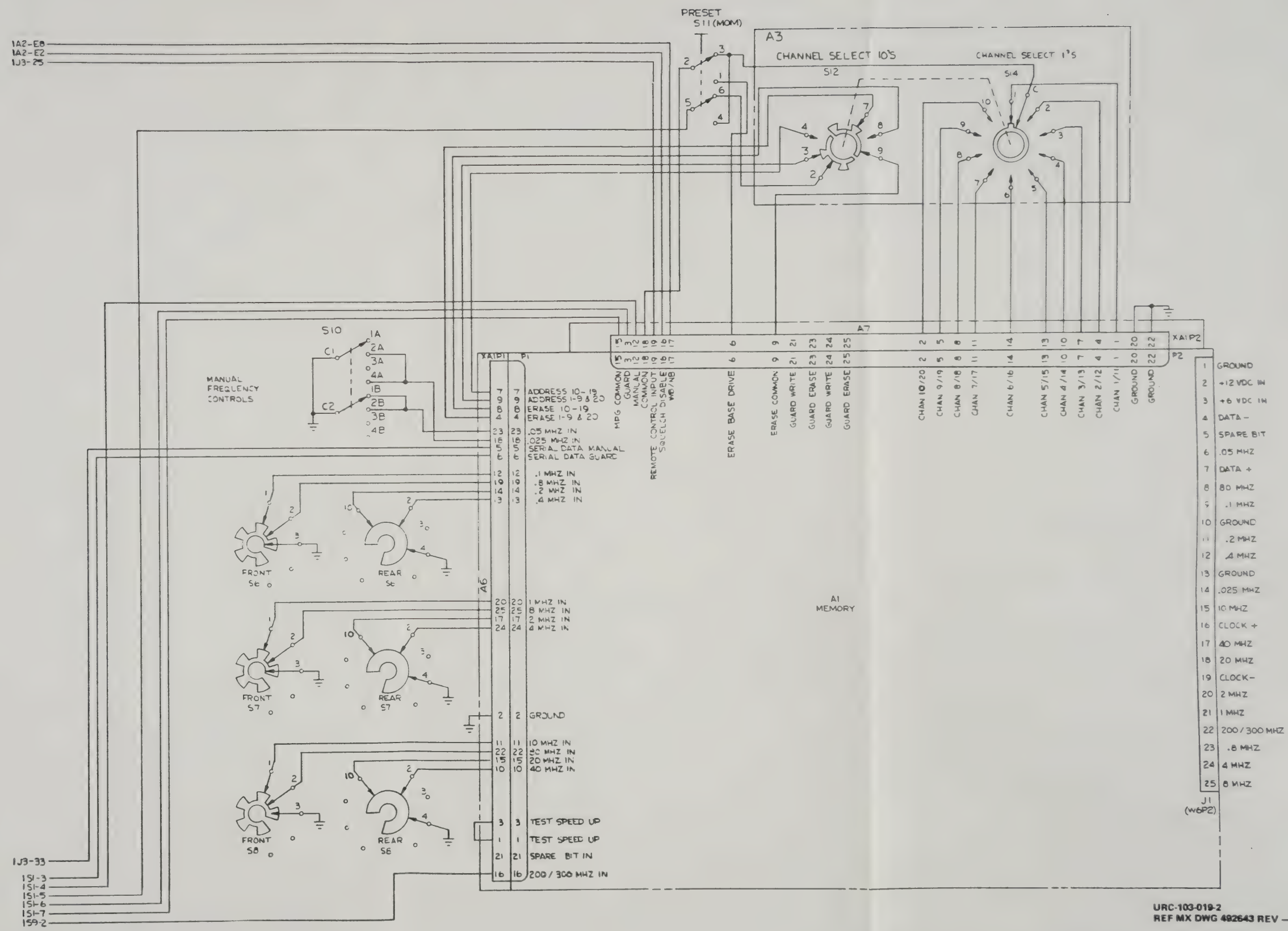
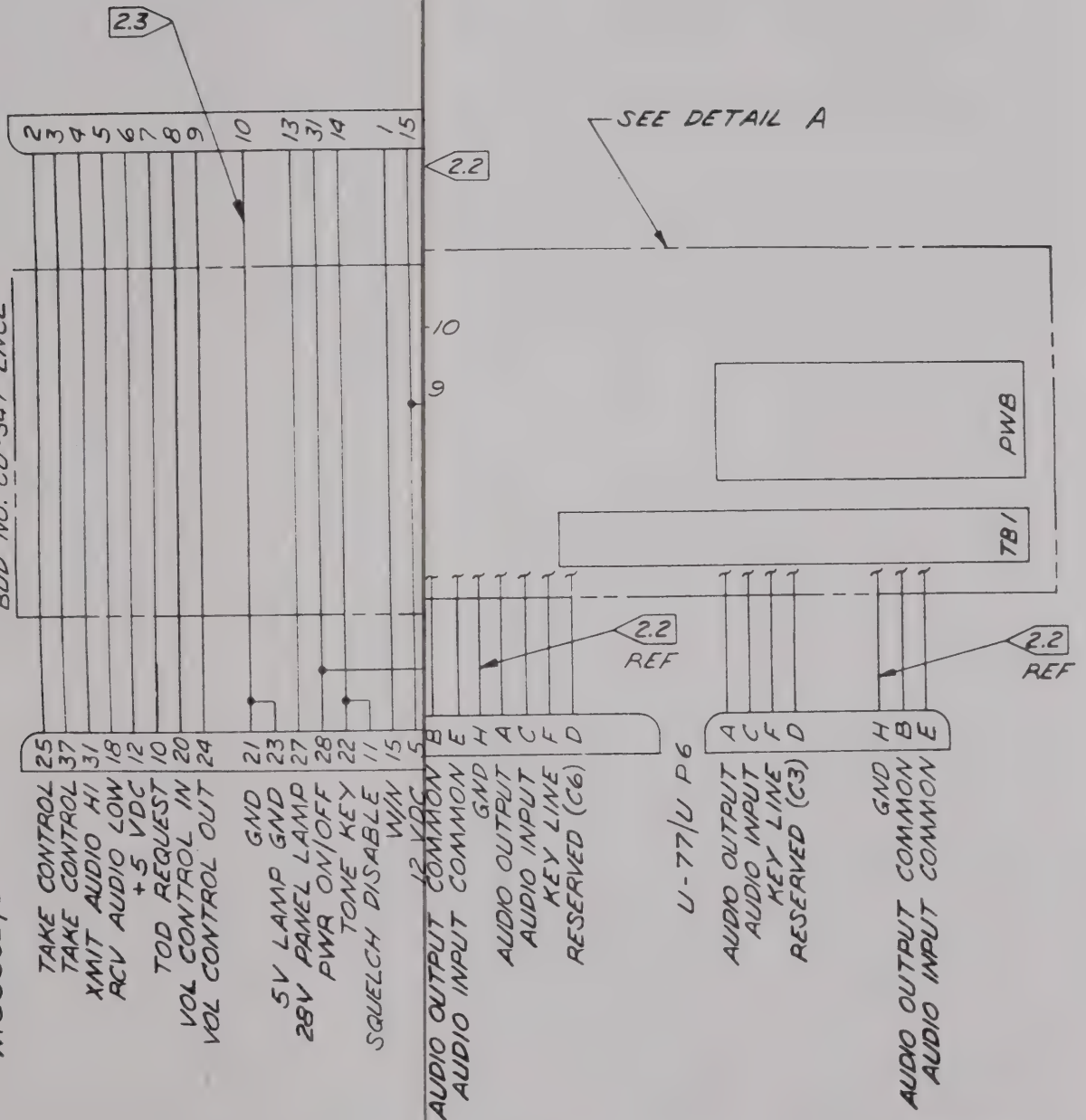


Figure FO-10. Diagram Schematic, Switching Unit C-10904/URC-98 (Sheet 2 of 2)

P1 (AMP) 206437-1

M 55302/8-03 P2

BUD NO. CU-347 ENCL



URC-103-032-1
REF MX DWG 494570 REV -

Figure FO-11. Diagram Schematic Cable Adapter (Sheet 1 of 2)

FO-25/(FO-26 blank)

P1 (AMP) 206437-1

- NOTES:
- 1.0 GENERAL

1.1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY DOD-STD-100.
- 1.3 UNLESS OTHERWISE SPECIFIED, DIMENSIONS, TOLERANCES, AND SURFACE FINISH APPLY AFTER PLATING OR CHEMICAL FILM TREATMENTS, AND PRIOR TO ORGANIC COATINGS.

1.4 DO NOT SCALE DRAWING.

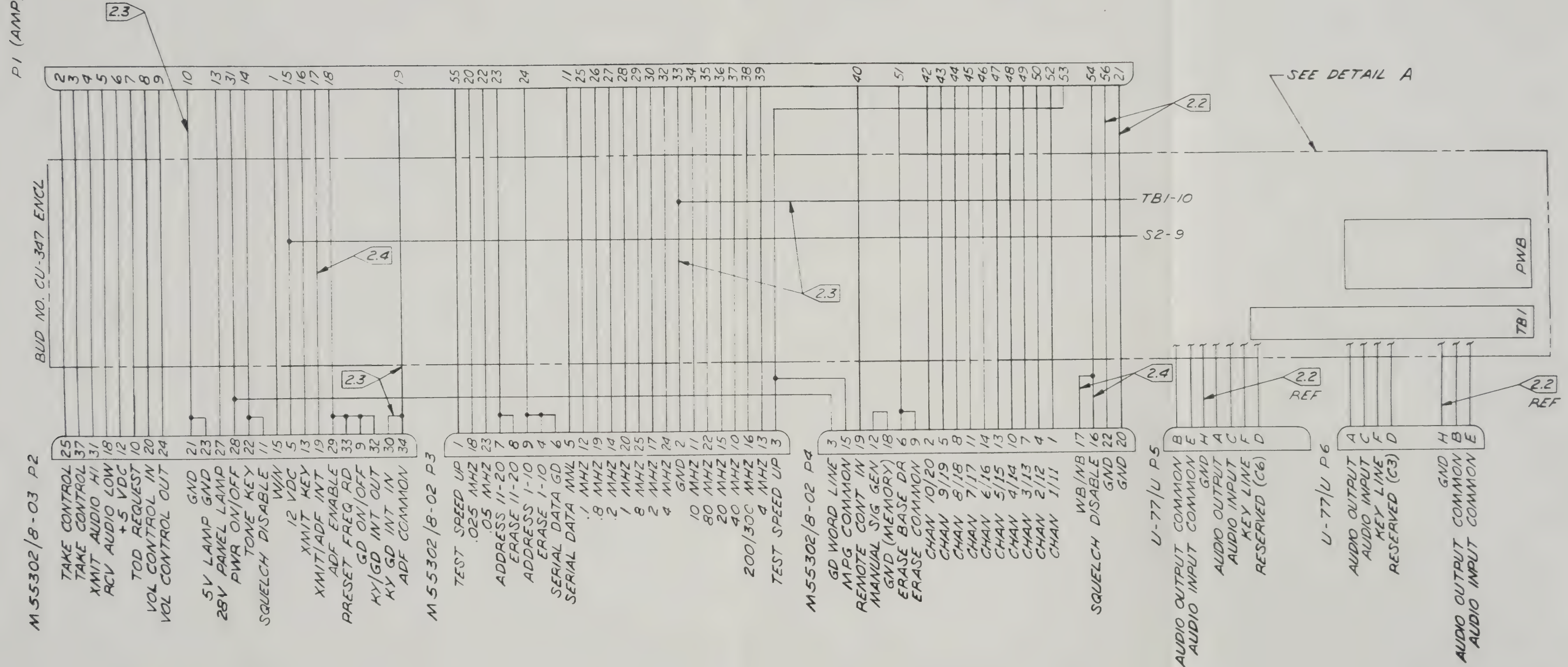
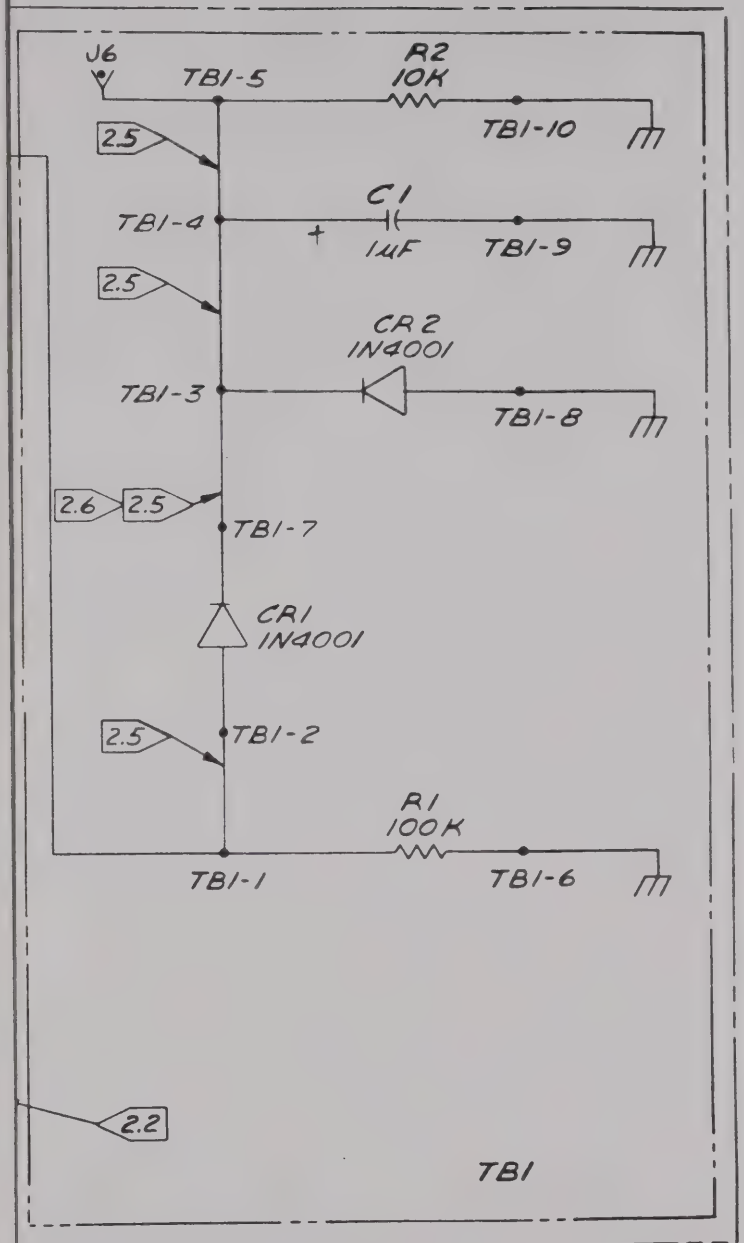


Figure F0-11. Diagram Schematic Cable Adapter (Sheet 1 of 2)



DETAIL A

URC-103-032-2
REF MX DWG 494570 REV A

Figure FO-11. Diagram Schematic Cable Adapter (Sheet 2 of 2)

FO-27/(FO-28 blank)

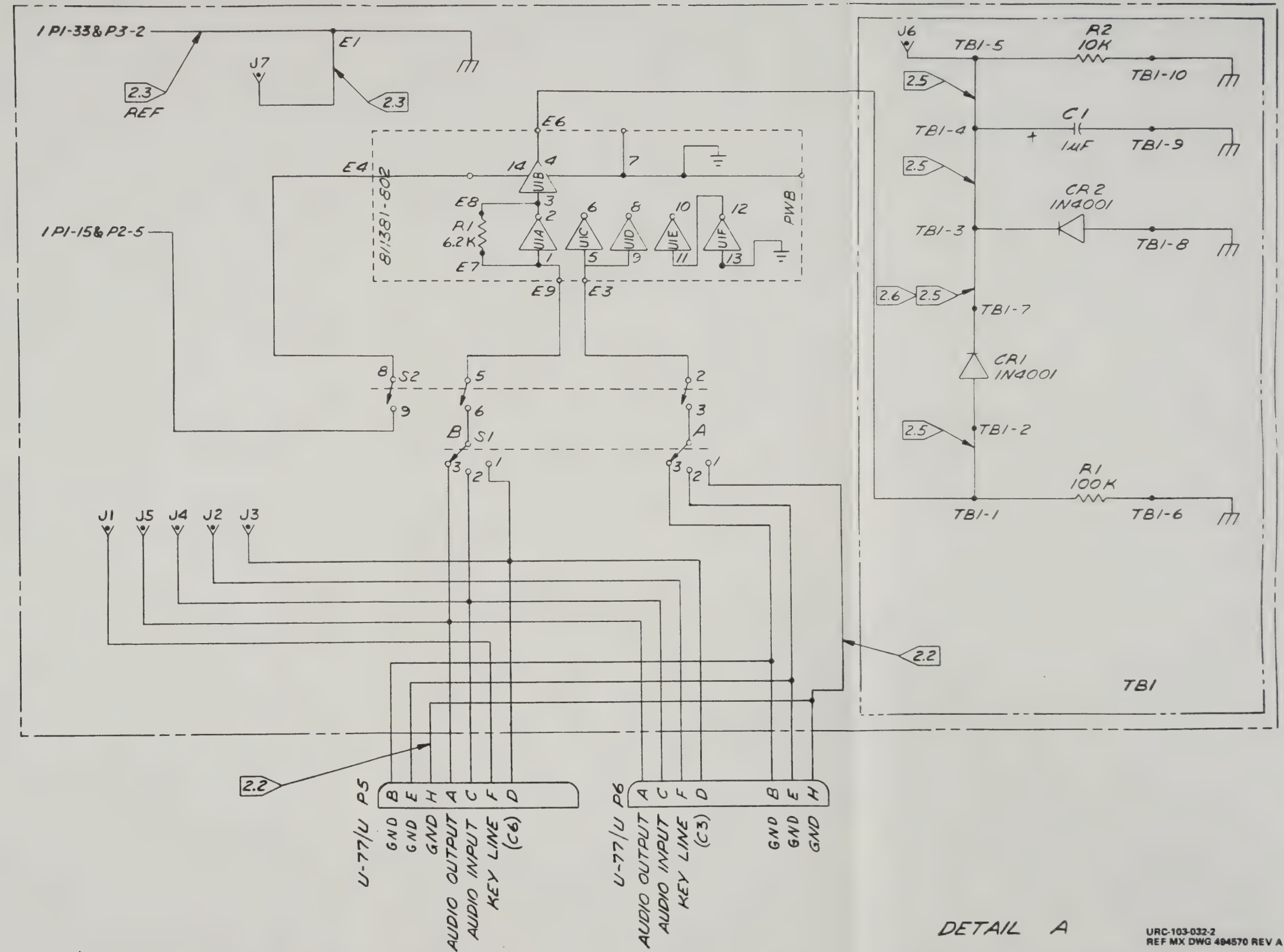
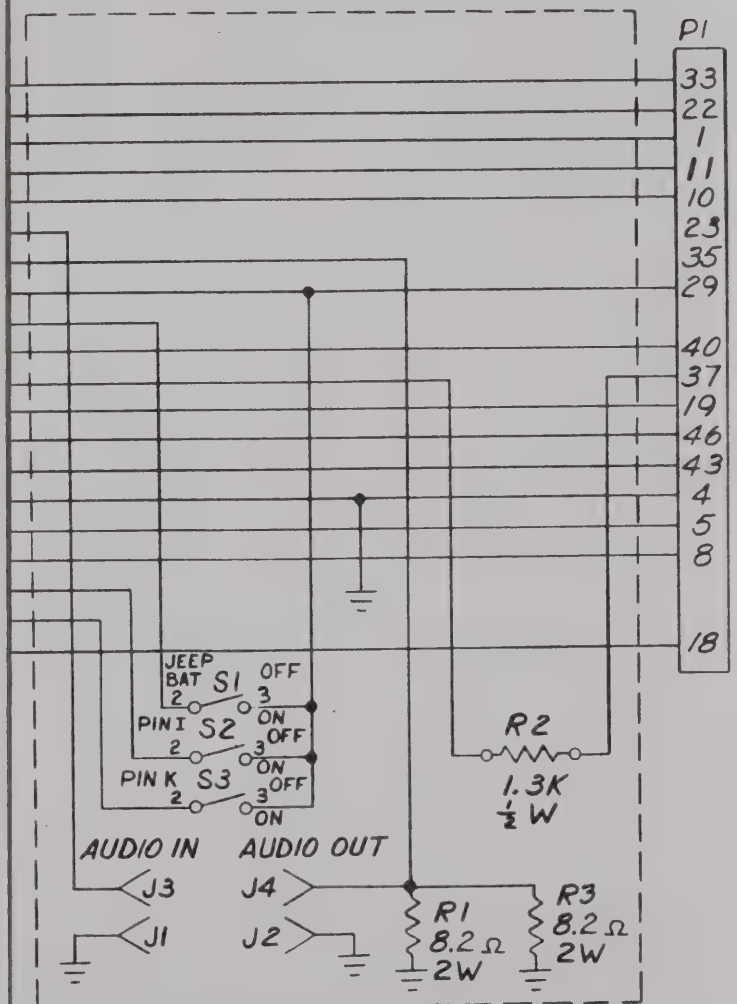


Figure FO-11. Diagram Schematic Cable Adapter (Sheet 2 of 2)

NOTES.

1.0 GENERAL

- 1.1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY DOD-STD-100.
- 1.2 UNLESS OTHERWISE SPECIFIED, DIMENSIONS, TOLERANCES, AND SURFACE FINISH APPLY AFTER PLATING OR CHEMICAL FILM TREATMENTS, AND PRIOR TO ORGANIC COATINGS.
- 1.3 DO NOT SCALE DRAWING.



URC-103-033
REF MX DWG 707203 REV A

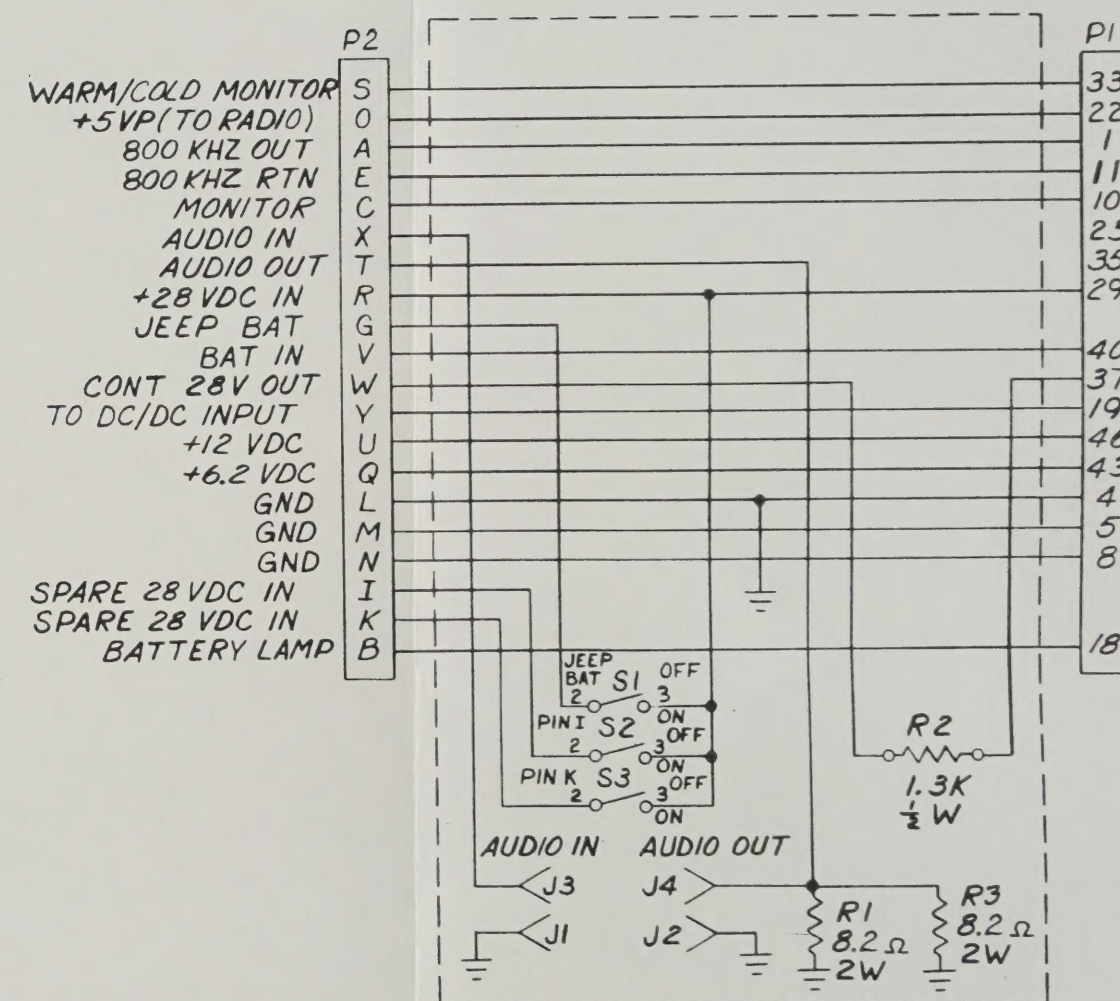
Figure FO-12. Diagram Schematic Cable Adapter, Divider/Audio

FO-29/(FO-30 blank)

NOTES:

1.0 GENERAL

- 1.1 INTERPRET DRAWING IN ACCORDANCE WITH STANDARDS PRESCRIBED BY DOD-STD-100.
- 1.2 UNLESS OTHERWISE SPECIFIED, DIMENSIONS, TOLERANCES, AND SURFACE FINISH APPLY AFTER PLATING OR CHEMICAL FILM TREATMENTS, AND PRIOR TO ORGANIC COATINGS.
- 1.3 DO NOT SCALE DRAWING.



URC-103-033
REF MX DWG 707203 REV A

Figure FO-12. Diagram Schematic Cable Adapter, Divider/Audio

FO-29/(FO-30 blank)

